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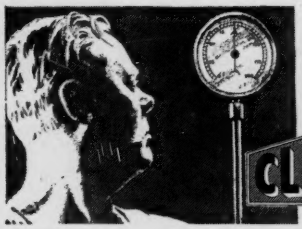

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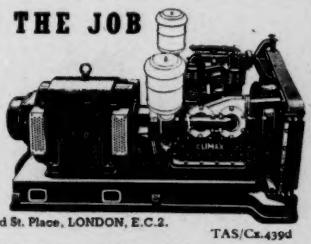

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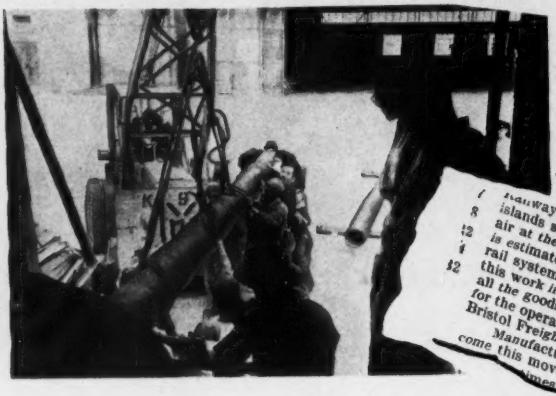

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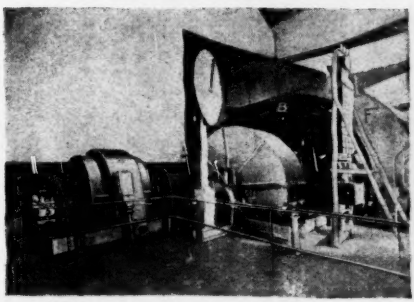

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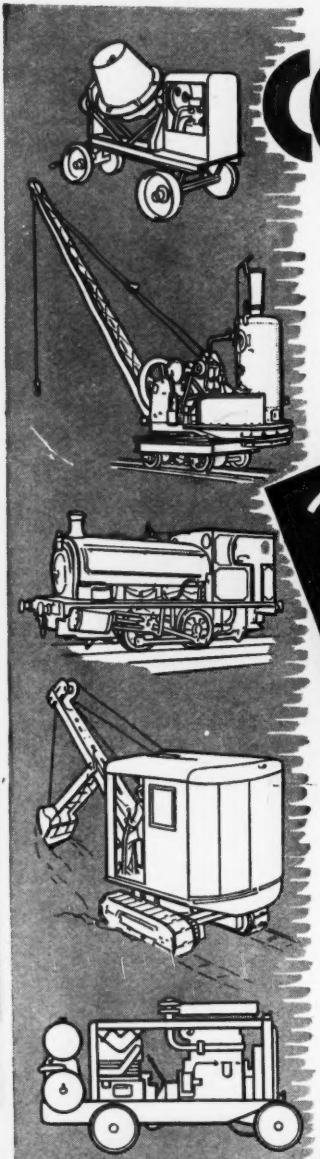

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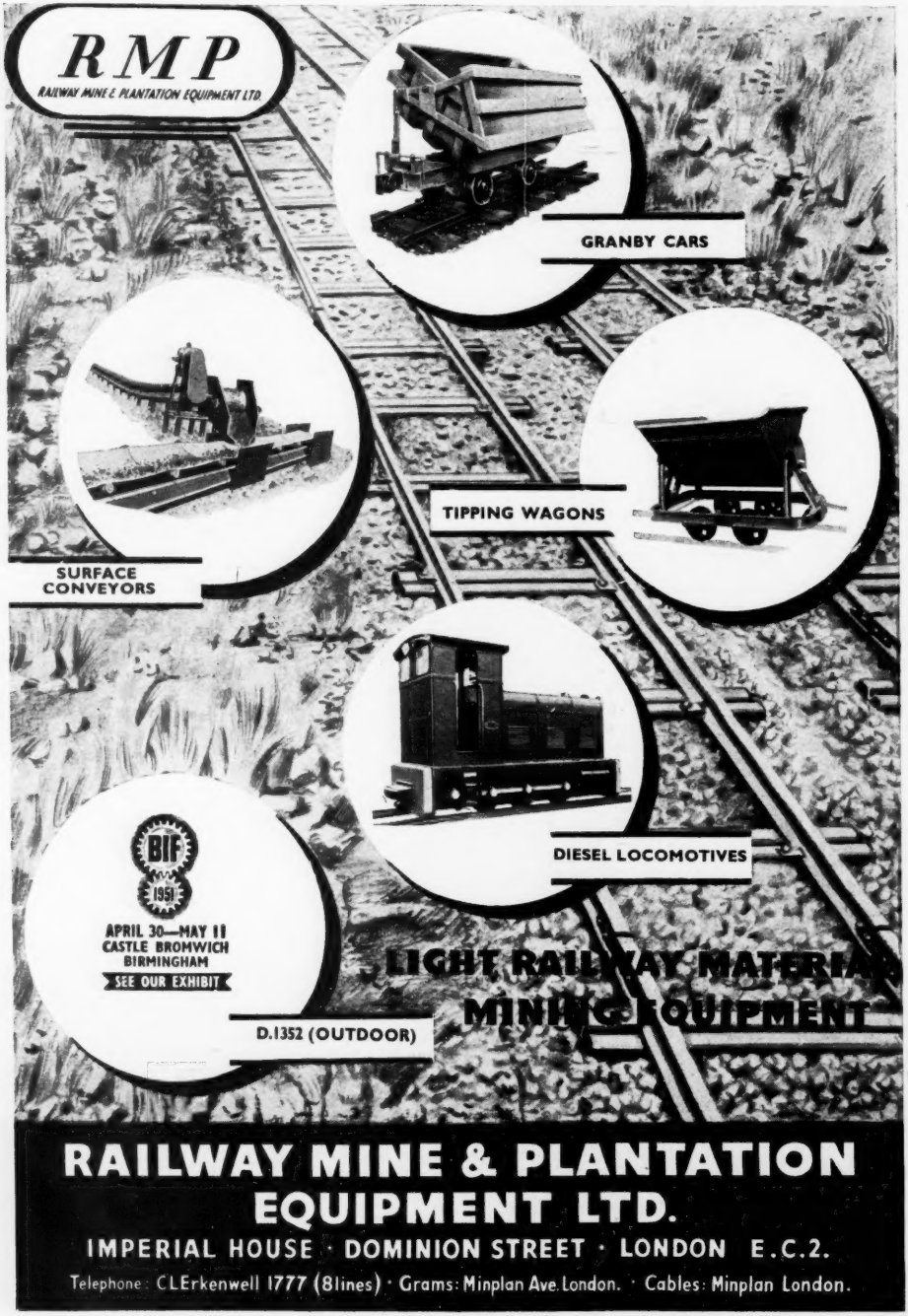
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THIS WEEK'S FEATURES

CONCRETE IN MINING—II - Page 363
IMPORTANT CANADIAN ALUMINIUM DEVELOPMENTS - - - Page 366

NOTES AND COMMENTS

Raw Materials Shortage Threatens British Industry and Rearmament

The President of the Board of Trade, when speaking in Parliament last Monday, made an alarming statement regarding the situation in the non-ferrous metals and sulphur. He did not discuss the iron and steel postion, but its seriousness is emphasized by our Iron and Steel Correspondent in this issue. As regards molybdenum, tungsten, nickel, copper and zinc, Mr. Wilson stated that the position had deteriorated, and that not only our general industrial production, but our defence programme itself would be in the gravest danger unless larger allocations were made us as a result of the international discussions now proceeding in Washington. He even hinted that it might be necessary to draw on our stockpiles, which, in any case, obviously cannot be enlarged under current conditions. As regards sulphur, the principal source of sulphuric acid—a primary necessity for almost all branches of industry—he was even more alarmist. He said that the sulphur position remained critical and uncertain. The allocation for the first quarter of the year of 81,000 tons was totally inadequate, and though we might receive 100,000 tons in the second quarter, this was by no means certain. If the Government's hopes were disappointed, the result would be "an unparalleled industrial disaster for this country." An allocation of 110,000 tons for the second quarter might enable us to maintain a resonable level of industrial production, but with 100,000 tons we should be considerably short and 81,000 tons represented a disastrous situation. Under fire as the Ministry of Supply has been in respect of many aspects of its transactions, it is not unnatural that there was a reluctance in Government circles to disclose the full seriousness of the position earlier, and the Press, generally, were insufficiently appraised of the basic position and steps being taken to meet the threatened difficulties to be in a position to criticize Government action effectively. With the very serious position now admitted, it is difficult to avoid the impression that the Administration, with its many preoccupations, has not paid sufficient attention to the issue of providing the supplies of raw materials necessary to keep our industries and the big re-armament programme provided with indispensable materials. In the case of sulphur nearly a year ago the possibility of a shortage was being discussed, and in December we called attention in general terms to the certainty of an approaching shortage. Unfortunately the general public in this country is not well-informed of the world situation with regard to the mineral industry and consequently an attitude of complacency both in the administration and public opinion was not unnatural, Obviously, however, the situation could not be disguised much longer and it is to be hoped that Mr. Wilson's disclosures will rouse the country to meet what is, apparently, a very serious situation.

Diamond Turnover Well Maintained

Forecasts that the high demand for gem diamonds, which was such a notable feature of last year, and in particular of the three months October to December, would be well maintained in the first quarter of the current year, have proved to be correct. In fact, according to figures just released by de Beers Consolidated, net sales by the Central Selling Organization for the quarter ended March 31, totalled £14,184,048, only £1,680,007 less than during the past three months. Sales of gem stones rose from £10,368,590 in the quarter under review to £11,296,231, chiefly as a result of high U.S. demand. In addition, other countries are reported to have absorbed larger quantities and it is believed that no early change in this tendency is likely. As regards industrial diamonds, the decline in sales from the unusually high level of £5,495,475 to £2,887,817 in the first three months of this year, explains the decline in total sales referred to above. This decline should not, however, be read as a sign of declining demand, it was probably due to lower U.S. purchases, which were exceptionally high in the last three months of 1950 as a result of stockpiling. At any rate, the latest quarterly figure is well above those for the first three quarters of last year and with increasing rearmament, demand for industrial diamonds should for some time be maintained around the £2,500,000 mark.

Smuggling of Strategic Material Through the Iron Curtain

A Reuter report from Berlin states that United States and British officials are preparing to break up a giant international ring—denominated the Thyssen ring—with a capital of $60,000,000 which is selling strategic goods to Russia through East Germany. Well-known firms in West Berlin, West Germany, Switzerland, Holland, Belgium, Austria, and the Soviet Zone are said to be implicated, and the first court case touching merely the fringe of the ring is fixed to open in West Berlin on May 4. In all, over 100 firms are said to be involved in the organization. Steel exports into East Germany in the last yearly trade agreement were fixed at 300,000 tons, but the amount actually sold is computed by British officials at around 1,200,000 tons. Mr. Howard P. Jones, Acting Director of the U.S.

High Commission, and E.C.A. representative in Berlin, pointed out to German business representatives that section 117(D) of the E.C.A. Act directed the Administrator to refuse delivery to participating countries of commodities used in the production of goods for export to non-participating countries which would be refused export licences by the United States, and that a recent amendment of the E.C.A. Act, provides that Marshall Aid is to be withheld from any country trading with the U.S.S.R., or its satellites, including Communist China and North Korea. The magnitude of the transactions alleged comes as somewhat of a shock and further disclosures will be awaited with much interest.

New Zealand Coal Mining Problems

New Zealand has proved recoverable resources of coal of all kinds totalling 300,000,000 tons, and a further 500,000,000 tons classed as "probably recoverable." Although the reserves of good bituminous coal are only a fraction of these amounts, the coal mining industry is vital in a country which has far from fully developed its hydro-electric potential, and which still depends on coal-fired engines for most of its railway services. The fact that New Zealand imports large quantities of high-grade coal, at heavy cost, makes the exploitation of indigenous coal resources even more important.

Coal represents 57 per cent of the energy available in New Zealand and with the expansion of population and industry, the need for coal is likely to increase. This reminder of the importance of coal in New Zealand's economy was given in a survey of the industry, by Professor J. Ivon Graham, contained in the 1950 *Bulletin* of the School of Mines, Otago University. Professor Graham is a former adviser to the National Coal Board who was appointed Professor of Local Mining at the Otago School of Mines in 1949.

The industry's problems, according to Professor Graham, are:

(1) The relatively short period during which work is done underground, and the conditions under which claims can be made for higher rates of pay: The environmental conditions now described loosely as "wet," "dusty," etc., could be profitably investigated.

(2) The need for more mechanization suited to New Zealand conditions. This could only be economically successful if the regulations covering the introduction of electricity underground were revised. This, in turn, could only be done when there was a more accurate picture of gas and dust conditions.

(3) The need to try different methods of working, giving a greater percentage extraction than the present bord-and-pillar method, and with a minimum of subsidence and fracture of superincumbent strata. Investigations of strata control are "most desirable."

(4) The high loss of valuable fuel through spontaneous combustion, particularly on the West Coast of the South Island, and in surface as well as underground workings.

(5) Timber decay in certain mines.

(6) Gas in the deeper mining of hitherto unworked seams.

(7) Need for the study of the effect of more mechanization on the dust problem.

The Otago School of Mines plans to expand its research work in the next four years. A committee has been set up, in co-operation with the Mines Department and the Department of Scientific and Industrial Research, to advise on the exploration, development and use of New Zealand's mineral resources. The Mines Department has agreed to appoint an officer to investigate the potentialities of coal-cleaning, and to supervise the construction of coal-cleaning plants. The school hopes to extend its work to research in the use of perlites, pumice and other mineral materials for the construction of buildings.

Portugal

(From Our Own Correspondent)

Oporto, April 12

Some particulars are now available regarding the terms upon which general export licences to the U.K. are being issued as the result of the recent trade agreement between this country and Great Britain. Applications for licences must be forwarded through the usual channels, the first step being a notification by the applicant that within a period of not more than five days he has deposited at the Government bank Esc.36 for each kilo of WO_3 mentioned in the original application, and in the case of tin Esc.15 in respect of the Sn. content. If this deposit is made, the application goes forward. If not, no licence is issued. For wolfram residues the rate is the same. In the case of mixed WO_3/Sn residues, the tax varies in proportion to the composition of the material. It is understood that the tonnage covered by the trade agreement is 500 tons for the first six months of the current year. For the moment no licences are being issued for Germany or Sweden.

Exports during January and February were: WOLFRAM, 412 tonnes to the U.K., 27 tonnes to Sweden, 17 tonnes to Germany and 14 tonnes to U.S.A.; TIN, 183 tonnes to U.K., 69 tonnes to Spain; PYRITES, 77,323 tonnes. In February there were large exports of white arsenic totalling 76,120 tonnes.

Malaya

(From Our Own Correspondent)

Kuala Lumpur, April 10

Perhaps the most outstanding feature here just now is the firmness of the local market after its recovery from the initial shock of American action. The possibility of a long-term price agreement to sell tin at a figure somewhere between £1,100 and £1,200 has naturally led to estimates being made as to how far this might curtail production. In your correspondent's opinion, any permanent reduction in prices, at any rate to the lower level, would certainly restrict production. It must not be forgotten that inflation is now a very serious factor. The price of every material and service is constantly rising and increasing production costs. An adequate supply of rice is useful, but nowhere near as important as it used to be in relation to the other major cost items which comprise the Chinese producers' budget, such as Diesel or electric power, engine and pump spares, timber and general construction material.

PROSPECTS FOR POWER AND COAL

As regards the effect of the present power shortage, this seems likely to be prolonged. The major southern generating plant at Bungsar Power Station, Kuala Lumpur, is short of 13,000 kW., owing to the breakdown of a complete generating unit; the repaired part can hardly be put back into service before, say, July. The outlook for coal supply is also disturbing, and this affects not only the coal burning dredges, but the Perak Hydro Electric electricity output during the dry season, the railways and other contributory services. The Malayan collieries are unable to get anywhere near meeting the demand. It would not be impossible, of course, to import more expensive coal from sources outside Malaya, but a limiting factor lies in handling the coal at port of arrival and getting it inland to consumers, as both port and transport facilities are hopelessly inadequate to deal with this additional burden. Up to a point we have been, and can continue, muddling through, but sooner or later this hand-to-mouth method must collapse, and this may happen before long.

Concrete in Mining—II

By A. GRAHAM THOMSON

Concrete, with its unique combination of properties—strength, durability, rigidity, impermeability and resistance to fire—is finding increasing application in mining, both for underground and for surface structures. Its low initial cost, negligible maintenance charges and, last but by no means least, the small demand for skilled workers required in the erection of concrete structures, enhances its value further. In this article, the author concludes by giving details of the important rôle played by concrete in the modernization and reconstruction of Britain's coal mines carried out by the National Coal Board—e.g. as foundation and lining of roadways, designed to carry heavy rails and cars; for explosion-proof stoppings, overcasts, discs, etc. The manifold technical and economic advantages of concrete formed, *inter alia*, the subject of the first part of this article, which appeared in our issue dated April 13, 1951. The accompanying photographs are published by courtesy of the National Coal Board, to whom acknowledgment is also made for information regarding the uses of concrete in collieries.

The question of transport demands as much attention at the bottom of the shaft as at the top. An important part of the National Coal Board's short-term plan for raising production is the increased use of mechanical conveyors underground and the elimination of inefficient haulage methods. Large mine-cars require heavy rails laid on a firm foundation and call for more durable roadways than are needed for light tubs. Concrete makes a permanent and substantial bed which will stand up to large modern mine-cars, while concrete lining is essential if ventilation costs are to be kept down.

In their "Plan for Coal," the National Coal Board indicate that 20 new large collieries and about 50 drift mines are to be sunk in the next 15 years. In many of these new undertakings the coal may be brought to the surface in an endless stream by a conveyor belt working up an inclined drift from the surface to pit bottom. Possibly the use of headgears in the shallower pits may be confined to man winding and lowering plant into the pit bottom. Pit headgears, however, will continue to be associated with coal production, for it will still be necessary to sink vertical shafts and in fact go even deeper for coal than at present.

From the mouth of a drift at Denby Hall, near Nottingham, one can descend on foot a long inclined tunnel for nearly a mile and a half at a gradient varying from 1 in 6 to 1 in 17, arriving eventually at the coal face more than a quarter of a mile below ground. The drift, 15 ft. wide by 10 ft. 6 in. high, is lined throughout with precast concrete slabs set in steel arches 1 ft. 9 in. to 3 ft. 6 in. apart, and has a concrete floor. Down one side runs a 48 in. canvas and rubber belt ½ in. thick. At present this belt is conveying coal only from Denby Hall Colliery, but later it will pick up the pit bottoms of Ripley and Britain Collieries by means of secondary drifts and adits, all furnished with conveyor belts. When the three pits have been linked up and all the belts are fully charged, coal will reach the surface at the rate of 8,000 tons a day.

For the time being the main belt at Denby Hall Drift empties at the surface into 5-ton railway trucks, which are shunted to a wagon tippler at the washery. Soon a further belt set on a concrete foundation will convey the coal to the washery (also of concrete construction), where it will be screened, sorted, washed and bunkered, without having been touched by hand at any point from the coal face to the bunkers.

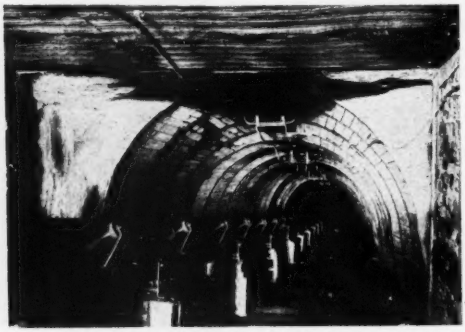
This is but one of many similar drifts under construction throughout the country. Barely 20 miles to the north of Denby Hall is Bolsover Colliery. About a mile from this colliery stands a derelict timber headgear. At its base is an inclined slab of gleaming concrete, inset with glass cubes to give light below. This is the mouth of Oxcroft No. 1 Drift, which on a lesser scale repeats the story of Denby Hall. Its concrete-lined tunnel descends at a slope of 1 in 7 to the Mainbright Seam 230 yds. below. Here again, a second conveyor carries the coal from drift mouth to distribution centre.

North of Sheffield, near Barnsley, a winding engine built in 1856 is still at work, but on the hills to the south in adjacent fields are the mouths of the Wharncliffe Silkstone Colliery's two modern drifts. Howbrook Main Drift at a maximum incline of 1 in 4½ carries a 36 in. belt down to the Whinmoor Seam 216 yd. deep. In the next field the Howbrook Steep Drift, capped by a huge concrete ventilation cowel, emerges at a slope of 1 in 1. Both drifts have concrete linings to the upper levels, while the Steep Drift has precast concrete segments, which are of a type used in lining London's newest tube extensions.

Even where coal is still being wound to the surface by skip, as at Moorgreen Colliery near Nottingham, or by tub and cage as at Methley Savile, concrete is playing its part in reconstruction. Moorgreen has a pit bottom road 330 yd. below ground level, which is 14 to 16 ft. wide. This road has a precast concrete slab roof, and its smooth walls offer no resistance to the ventilation currents of air. A double railway track carries 100 h.p. locos handling 5-ton tubs which empty into a skip for haulage to the surface. Methley Savile, though its equipment is by no means modern, has roads of *in situ* concrete, set to easy curves and rendered with ¼ in. rendering finished in white, which ensure that no eddies in the flow of air will reduce the efficient ventilation of the pit.

Belt set on concrete foundation to convey coal to the washery, also of concrete construction, at Denby Hall Drift

At the Comrie pit comparatively large mine-cars with swivel couplings are in use. The cars are each tipped bodily, without uncoupling, and the coal passes from the intake roadway to the return roadway, which alone is used for hauling it to the surface. The floor is of concrete, the walls being formed of concrete cast *in situ* and spanned at 2 ft. intervals by 12 in. by 8 in. joists. Concrete



A view looking down Oxcroft No. 1 drift at Bolsover Colliery. Note concrete blocks supporting conveyor belt

is then backfilled between the girders. The span is 22 ft. 6 in. in the clear.

For supporting roadways in ground which has settled, concrete merits the most careful consideration, especially at a time when steel is expensive and scarce. Its value for this purpose has been recognized more fully in America and on the Continent than in Britain. Most of the conditions are met either by a monolithic arch, if necessary with reinforcement, or by vertical concrete walls spanned by steel girders. The walls vary in thickness according to the span, but unless the circumstances are exceptional, 12 in. is generally enough. Arched

Entrance to Howbrook main drift, Wharncliffe Silkstone Colliery, near Barnsley, showing concrete lining. A 36 in. conveyor belt carries coal from the Whinmoor seam

support is better than girders, but the expensive formwork makes its first cost higher. On the other hand, it is free from all maintenance charges, and in offering the minimum of resistance to the ventilation current it reduces the work of the fan, and consequently saves power.

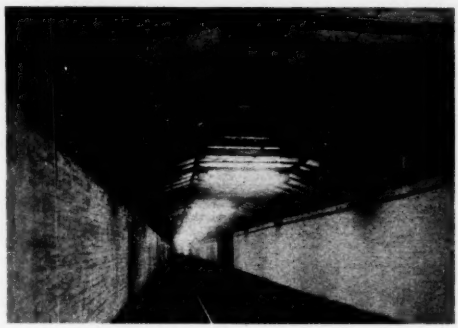
In difficult ground where there are heavy pressures, a circular or eliptical tubular support of precast concrete blocks makes a good lining. The blocks are accurately shaped to form a solid ring when erected and some are designed for interlocking or with steel reinforcement threaded through them to resist distortion. A concrete lining of German origin, the Schaefer, has done good service in Britain. It consists of concrete blocks with wooden cushioning spacers. The advantage of this method is that it allows for settlement and distortion without impairing the stability of the structure.

Soft patches in the floors of main haulage roads can give much trouble and makeshift remedies are generally false economy. In the United States concrete is used to overcome this difficulty once and for all. The usual method is to put a reinforced concrete girder, 10 in. to 12 in. deep and 18 in. wide, under each rail. These girder supports, built at an Illinois mine at a cost of 10s. per linear foot of the road, saved an annual expenditure of from 2s. to 3s. per foot of the road in upkeep costs alone. In ten years the track has cost nothing to maintain and officials believe that it will outlast the mine.

At a very bad patch it may be necessary to build a reinforced concrete slab to cover the patch completely. This method is more expensive, but the cost is soon offset by the elimination of accidents and by reduced maintenance charges.

A wall of concrete blocks can quickly be erected to isolate a fire started by spontaneous combustion underground. Blocks measuring 8 in. by 16 in. are suitable and a rendering of cement makes the whole wall airtight. In an emergency time can be saved by "guniting," or rendering with a cement spray.

Concrete blocks can also be used effectively for



Precast concrete slab roof of pit bottom road at Moorgreen Colliery, near Nottingham

ordinary stoppings. The bottom and sides of the road should be recessed to a depth of 1 ft. and to a width of about 18 in. to conform to the blocks, which should then be laid up to the roof with cement mortar. Finally, the stopping should be caulked tightly along the top and sides. The wall will be strong and durable, inexpensive and quick to build.

For explosion-proof stoppings it is better to use solid concrete. The United States Bureau of Mines carried out a series of tests, from which they concluded that a concrete stopping wall buttressed against a coal-rib acts as a flat arch of enormous strength and can be made to resist an explosion pressure of 50 lb. per sq. in.

There are two methods of constructing overcasts with concrete-block walls. A concrete-slab or girder and slab roof may be employed, or alternatively the overcast may be constructed monolithically throughout. Both methods give a strong and permanent airtight structure and present a smooth, even surface to the ventilating current. Here again, the plasticity of concrete is valuable in forming easy streamlined curves for the overcast air-flow.

For supporting hangings pancake discs have long been popular on the East Rand. These discs are 30 in. in diameter by 4 in. thick. The concrete used is a very lean mixture and the compressive strength approximately

3,000 lb. per sq. in. Most discs have a timber capping.

The principal difficulty in designing concrete mixes for discs and other forms of support underground has been the absence of exact data on the magnitude and nature of the load to be carried. Much valuable information was obtained from tests carried out on the Rand a few years before the war by Professor W. J. Walker and Mr. S. F. Gimkey, who carried out an exhaustive series of

Methley Savile Colliery, near Leeds. Concrete lining to road at pit bottom 410 yd. deep, concrete 12 in.-18 in. thick between steel arches, finished with ¼ in. cement rendering

experiments with various types of props. The object of the investigations was the provision of suitable "hanging" supports which could replace wood as far as possible, and, while being cheaper, should yet provide the valuable property of gradually yielding to a moving load without sudden and treacherous collapse.

The tests showed that the most satisfactory column would be one designed to take a tension load under sand-filling, and that the internal sharp-edged ring column would prove the best, both from the economic and load capacity point of view.

In considering the suitability of the various forms of supports, it has to be borne in mind that, except in the case of permanent roads or stations underground, there is no serious intention of making such supports very permanent. While the experiments showed that columns could be produced which would stand the gradual application of loads with more give than the pancake, the latter would nevertheless take a considerable proportion of the ultimate load without much contraction. One disadvantage of concrete for pancakes is that weather conditions have an important effect on setting and consequently on ultimate strength. While pancakes serve their purpose excellently in mines with a comparatively flat dip, they are awkward to construct where any dip exists. It might be added that, on account of the difficulties of transport and construction, the sand-filled supports used by Walker and Gimkey in their experiments are never likely to be popular.

While the subject of supports underground and their rigidity or otherwise is highly controversial, it can be stated that for permanent works concrete or concrete and steel are being increasingly favoured on the Rand. Loading boxes or ore-chutes are in many cases constructed wholly of concrete. In main haulages arches of steel surrounded by 18 in. of reinforced concrete are used where the opening is some distance away. Nowadays nearly all incline shafts in the deep levels are constructed of concrete and steel. A concrete headgear has been specified for one of the new Free State mines.

I.M.M. Dinner

The annual dinner of the Institution of Mining and Metallurgy was held at Tallow Chandlers' Hall in the City of London on April 16, when about one hundred members and guests assembled under the presidency of Col. L. C. Hill. The guests included the Earl of Bessborough, the Presidents of the Royal Society of the Institutions of Civil, Electrical, Mechanical and Mining Engineers, of the Institutes of Metals, of Metallurgists, and of Petroleum, and of the Geological Society, the Chairman of the British Overseas Mining Association, the Director of the Geological Survey, and the Deputy Master of the Royal Mint.

Sir Henry Tizard, in proposing the toast of the Institution, said that he had done so on two previous occasions, in 1934 and in 1947, and he proceeded to compare the prices of metals in those years with the price to-day. No one could predict the position over the next five years, but it was evident that along with the need for search for and exploitation of new mineral resources, economies in the uses of metals must be found and the use of substitutes must be learned. It might not be necessary to use substitutes, but the knowledge would be an insurance in peacetime development and war emergency. Sir Henry Tizard went on to speak as a former Nuffield trustee of the astonishing success of the Nuffield scholarship scheme for mining students.

Col. Hill, in responding, mentioned the success of the Conference on Wire Ropes, initiated by the Institution last year, and said that the next symposium, on mineral dressing, was proposed for September, 1952. Like Sir Henry Tizard, he referred to the success of the Nuffield scholarships and of the Mond-Nickel travelling fellowships, which had enabled over 100 men, both teachers and students, to gain practical experience in different parts of the world. The Institution intended to make an appeal to mining and metallurgical companies to subscribe annually to a fund to continue and extend the work which the Nuffield Foundation had begun.

Taking up the question of metal prices, Col. Hill suggested that they compared not too badly with prices in agriculture. Wheat, cotton, wool, hides, coffee, and rubber had advanced in price by from 3½ to 7½ times since 1939, the average being five times, while prices for copper, lead, zinc, tin, and pig iron had advanced from 2¾ to 3¾ times, the average being 3½. The position as regards sulphur was undoubtedly severe. There was a definite shortage, but it should be borne in mind that the annual consumption had risen from 6,000,000 tons twenty years ago to 11,000,000 tons to-day, an increase of 1,000,000 tons every four years. Sulphur was obtained from the great salt zones in Texas, which had passed their peak. Last year they produced 5,333,000 tons, and this year they would not reach 5,000,000. Many of the deposits of rock sulphur in other parts of the world were relatively inaccessible. Undoubtedly, there was a definite period of stringency ahead in acid production.

Sir Lewis Fermore proposed the health of the guests, saying some gracious words about each of them, while Prof. E. D. Adrian, O.M., President of the Royal Society, responded for the guests.

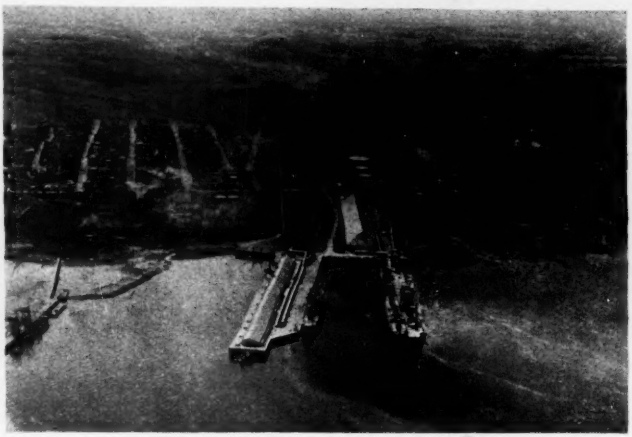
The final speech was made by Col. Clive Temperley, chairman of the British Overseas Mining Association, in the course of which he put up a stalwart, if jocular, defence of company directors. He suggested that just as in art, while everybody admired the old masters, no one gave a thought to the patrons without whose wisdom and taste they would never have come into existence, so in mining there was a tendency to disregard the business enterprise involved—the enterprise of the risk-takers, the speculators, the gamblers, the capitalists.

Important Canadian Aluminium Developments

(From a Special Correspondent)

The world shortage of aluminium, becoming more acute with stockpiling demands of the U.S. Government, has caused a considerably increased activity, and expansion, in the bauxite mining industry. Mining of aluminium ore in British Guiana by the Colony's chief producer, Demerara Bauxite Co., Ltd., is being expanded by an increase of 400,000 tons of dried bauxite a year; this will be a 25 per cent increase over the 1950 estimated output of 1,600,000 tons of dried ore.

Additional equipment for drying, calcining and transporting the ore at the Demerara plant at MacKenzie, B.G., will cost $3,500,000; of this amount, approximately $2,000,000 will be spent on a special calcining kiln — the world's largest in the bauxite industry— $1,000,000 for an additional drying kiln, and $500,000 for ore cars to increase the transport facilities. The new super-calcining kiln will take about 15 months to construct and will manufacture an aluminous compound exclusively for use in the refractory industry. Designated "RASC," this dead-burned product was developed by the Demerara Bauxite Co. in response to a keen demand for a super-calcinated commodity.



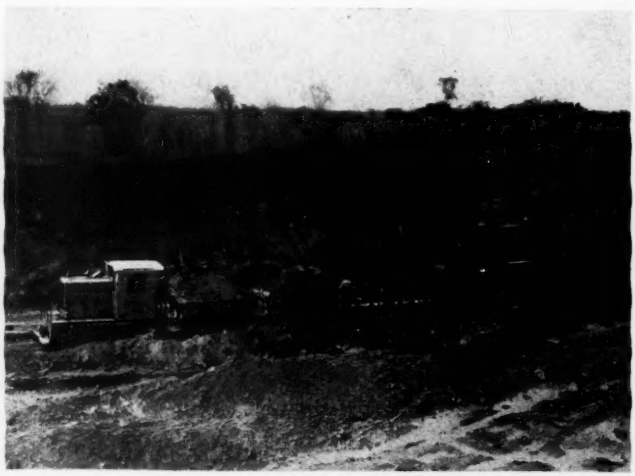
The bauxite terminus of the Aluminum Company of Canada at Port Alfred, Quebec, on the Saguenay River

Almost the whole of British Guiana's bauxite output goes to Canada to be made into aluminium by the Aluminum Company of Canada, Ltd., at Arvida, Quebec, but some is employed in refractory and abrasive industries. In 1950, the Colony's total exports of aluminium ores was valued at $13,748,402.

Jamaica is also developing its natural resources. Work has begun on a new alumina plant by Jamaica Bauxites Ltd. to remove the impurities from the raw ore before shipment. The different composition of the Jamaican alumina bearing ores has necessitated years of research by this company in order to utilize the island's bauxite deposits. The company, a subsidiary of Aluminium Ltd., of Montreal, has concluded a contract for an initial outlay of $8,000,000, to be expended for mining equipment and erection of a new type of plant for converting the ore into alumina. This will be the first alumina plant to be built in the British West Indies.

The alumina from the Jamaican enterprise will also supply Canadian smelters. Economics of the ocean shipping problems, in addition to the fact that existing ore plants at Arvida were designed for the British Guiana type of bauxite, were determining factors in the decision to build the Jamaica Bauxite Ltd. works on the island. A large part of the new equipment is being purchased in the United Kingdom.

A new contract, by the United Kingdom, for an additional 50,000 tonnes of aluminium from Canada in 1951 means an increase of 200,000 tons of bauxite alone, probably from British Guiana. In terms of the Jamaican ore, 300,000 tons would have to be mined to produce the same quantity, which illustrates the differential between the Jamaican and British Guiana products. The United Kingdom agreement is for a total of 200,000 tons of aluminium this year, to be increased to 220,000 tons from the Aluminum Company of Canada for 1952-53. In recent years, annual reports from this source have been running at approximately 150,000 tons. The United Kingdom rolling mill capacity for aluminium was



Mining bauxite by open pit methods at MacKenzie, Brit. Guiana

recently increased by as much as one-third with the opening of Northern Aluminium Co., Ltd.'s new mill at Rogerstone—one of the largest mills outside the U.S.A.

Aluminium ingot output is being expanded rapidly in Canada. Additional capacity at Shawinigan Falls, Quebec, using power from the new Trenche hydro project on the St. Maurice River, is being reactivated by the Aluminum Company of Canada. At Beauharnois, Quebec, the company's aluminium ingot reduction plant, which has been idle since World War II, has been renovated and will increase Canada's annual output by 32,000 tonnes, bringing Alcan's ingot production to over 400,000 tonnes a year. Construction is also under way to expand the Isle Maligne, Quebec, smelter.

A new hydro-electric development of 250,000 h.p. is being carried out in Northern Quebec, on the Peribonka River, which flows into Lake St. John. This project is estimated to cost $30,000,000.

The Shipshaw Hydroelectric Power Project: Shipshaw No. 1 dam (background) and Shipshaw No. 2 dam (foreground). Note the new all-aluminium bridge (foreground left)

At the beginning of 1951, British Columbia signed an agreement with the Aluminum Company of Canada, giving the company water rights in the Tweedsmuir Park area, 400 miles north of Vancouver. The agreement is subject to ratification by the provincial legislature. Preliminary studies have cost $1,000,000 in order to establish the engineering requirements, a $500,000,000 development being envisaged. The 1,600,000 h.p. plant would require damming the Nechako River and backing up the Tahtsa-Kemano water-sheds to be tapped from the Pacific side by a 10-mile tunnel. The power would be transmitted 50 miles to Kitimat, at the head of the Gardiner Canal, which is navigable for ocean-going ships transporting alumina.

The first project was begun in February with the construction of a ten-mile road to the power plant site, to connect a Gardiner Canal point 50 miles up-coast from Vancouver to the Kemano River powerhouse site and will be used to transport heavy building equipment. This is scheduled to be finished by June. Work has also started on an access wharf at Kitimat, the proposed site of the smelter, and a town of 50,000 people.

Whether the project will be completed beyond the present preparatory stages depends upon the international situation. If commercial demand or increased defence requirements in the Western democracies present sufficient justification for so vast an undertaking, a start may be made. One of the uncertainties, for example, is whether the U.S. Government would purchase a portion of the aluminium output for its stockpile. Last autumn, an offer of Canadian aluminium for such purposes was rejected by the United States, but there have been several changes in the aluminium picture since then.

Nathanael V. Davis, president of Aluminium Ltd., recently declared that "we are convinced that large-scale production of aluminium in B.C. is attractive," adding that aluminium could be produced there "at costs lower than we have been able to anticipate elsewhere."

British Industries Fair

The 1951 British Industries Fair, with an estimated evaluation of exhibits approaching £10,000,000, is the first event in the Festival of Britain season. The Fair opens on Monday, April 30, and will run until Friday, May 11. It will not be open on Sunday, May 6. As in previous years, this, the 30th Fair, will again be held at Earl's Court, London, and Castle Bromwich, Birmingham.

For the first time at any B.I.F., over a million sq. ft. of stand flooring have been laid, and there will be 2,861 exhibitors in 90 industries. Products of the engineering industry, electrical plant and equipment as well as contractors' plant will be on view at Castle Bromwich, and reports to hand so far indicate that the engineering and outdoor sections at Birmingham, which were such an outstanding feature of the 1950 Fair, will this year be larger and still more comprehensive.

The exceptional demand for space at this year's Fair indicates the determination of British industry to show the widest range of its finest products in Festival of Britain year, and many industries are preparing special displays, demonstrating in ample measure the skill and adaptability of Britain's manufacturers and the high quality of British goods of every description. According to preliminary figures available at the time of going to press, there is every reason to hope that the record of 19,005 buyers from abroad, who visited the B.I.F. last year will be surpassed.

As last year, marketing specialists of the Economic Co-operation Administration, whose presence proved most useful to many exhibitors seeking entry to the American market, will again be available for consultation both at Earls Court, and at Castle Bromwich. The E.C.A. exhibits will present four themes: (1) America's regional markets, (2) The way to the U.S.A. market, (3) British goods in American markets, and (4) American Government services in Britain for British exporters. The booths will explain the routine recommended by U.S. experts to manufacturers in Britain who are anxious to sell in the U.S. The advice includes making a market survey; consultation

with American buyers in London; studying consumer buying habits and channels of distribution; suitability of product; advance check on Customs duties; and the location and size of the major U.S. markets for the product.

During the next few weeks we shall describe a number of the exhibits which will be on view during the Fair, of which the following is a first selection.

British Insulated Callender's Cables

In the electrical section, Castle Bromwich, British Insulated Callender's Cables Ltd. will be showing a wide range of electrical products on stand No. C.513. The theme of the display will be based on the company's world-wide service to industry, and exhibits will include: high-voltage cables, mass impregnated non-draining cables, the claw-type cable cleating system and the industrial wiring system; also, power capacitors, electric resistance welding machines and a demonstration model of the wire rope parting machine.

Of particular interest in the high voltage cables section will be the world's largest cable—a 132 kV., 3-core I.P. cable of over 5 in. diameter.

The mass impregnated non-draining cables, developed and patented by B.I.C.C., are of normal paper-insulated, lead—or aluminium—sheathed construction, but include a special impregnating compound that will not migrate, even in vertical runs at sustained maximum working temperatures. They are, therefore, particularly suitable for installations in mine shafts, lift shafts, for rising mains in blocks and flats, etc. They are particularly advantageous for high-ambient temperature situations overseas and are available for service up to 11,000 volts—to British or other recognized standards.

In the section devoted to power capacitors, will be featured a model of the 15,000 kVAr bank of power capacitors installed at Sorel on the electricity supply system of the Shawinigan Water & Power Co. Ltd., Quebec Province, Canada. This capacitor bank, comprising sixty 250 kVAr units, exemplifies the increasing use of B.I.C.C. power capacitors overseas. Capacitors for use as single units will also be covered in this section. These are produced in many types to suit the various needs of industry, but particular prominence in the display will be given to mining-type capacitors.

A working scale model of the company's RP 25 wire rope parting machine, produced during the past year, and the first of its kind to be marketed, is bound to attract much attention. It will be used to demonstrate the parting of wire ropes in such a manner that the ends are sealed and left in a tapered form—thereby greatly facilitating threading through blocks or pulleys and subsequent clamping. The length of time required to part wire ropes with this machine varies from about 45 seconds to two minutes, these times comparing with between 12 and 20 minutes required for former processes of wire rope parting.

Armstrong Whitworth & Co. (Pneumatic Tools) Ltd.

This firm, engaged in the production of compressed air equipment, is now associated with the Independent Pneumatic Tool Co., Aurora, Ill., U.S.A., and Thor Tools Continental, makers of the famous Thor power tools. Exhibits at its stand (No. D.242), at Castle Bromwich, which is shared with their associates, Air Pumps Ltd., will include a representative range of Armstrong Whitworth pneumatic tools.

Of prime interest in the Armstrong Whitworth exhibit is a Thor Riveting Hammer, already known throughout the world for its unrivalled power. This tool, the first of the Thor range to be produced in England, is the forerunner of a variety of types. Other pneumatic tools by Armstrong Whitworth include medium and heavy concrete breakers of great power; relatively light in weight, they are designed for trouble free work, with minimum fatigue. These qualities are also apparent in the beautifully balanced A. W. pick, with strikingly low air consumption and the Thor pick-spade, a tool of extreme power used to speed up clay digging and excavating.

The company will share in the world-wide sales organization of the American company, and a further innovation is that it is prepared to arrange instruction for overseas visitors at Close Works, Gateshead-on-Tyne, in the servicing and maintenance of its pneumatic tools.

Also on show at this stand are portable and stationary compressors by Air Pumps Ltd. Representative of the range with capacities of 5 to 1,400 cu. ft., per minute free air delivered, are two units, viz.: Model D.150 and Model D.76.

The "600" Group of Companies

In their Pavilion (Stand No. 1332) and adjacent outdoor stand (No. 1327/1226), both at Castle Bromwich, Jones KL Cranes are exhibited by George Cohen & Co., Ltd., as distributors, in the U.K., in conjunction with the manufacturers and exporters, K. & L. Steelfounders & Engineers Ltd., Letchworth, Herts. Of special interest is the new Jones KL 66 6-ton mobile crane which is shown for the first time. It is designed to meet the requirements of high speed for grabbing or operating with a magnet and great sensitivity of control. The rated maximum load of 6 tons (*i.e.*, no more than 66⅔ per cent of the actual tipping load) is taken at 9 ft. radius and can be hoisted at speeds up to 40 ft. per minute. Jibs of various lengths up to 60 ft. are available. A differential is employed in conjunction with four-wheel drive. This makes wheel-spin impossible, and gives great tractive power. The Jones KL 66 can be supplied as a mobile crane on pneumatic-tyred restrictor wheels, or on crawler tracks. It is also available on a rail chassis, lorry mounted, or on a fixed base suitable for mounting on a platform or wharf.

Two "Weybridge" gang slitting machines, suitable for a variety of materials, including tin-plate, "Stalloy," brass, silicon-iron, laminated mica sheeting and metal reinforced asbestos are also exhibited by the same firm.

An interesting development featured by this group is high-quality iron powder—suitable for the manufacture of general engineerings components by powder metallurgy—for the quantity production of which George Cohen Sons & Co. have recently laid down a new plant. Known as "Sintrex" Metallurgical Iron Powder, this new powder will be exhibited in the "600" Group Pavilion, together with "Sintrex" Electrolytic Iron Powder, which, by virtue of its exceptional purity is widely used in electromagnetic applications.

Ransomes and Rapier Ltd.

Ransomes and Rapier Ltd., Waterside Works, Ipswich, and 32, Victoria Street, London, S.W.1, will show excavators, mobile cranes and contractors' plant on stand No. 1210 and outdoor stand No. 1311. Included among the exhibits will be the Rapier 462-1¼ cu. yd. (1,200 litres) excavator, which has inter-changeable front end equipments for shovel dragline, grab or crane. It is offered with a choice of Diesel engine, or electric motor drive, either of which can be fitted to the standard machine without altering the gearing. This excavator is one of the company's range which includes all sizes from ¼ cu. yd. upwards. The biggest shovels in Europe and the world's largest walking draglines are part of the Rapier range.

Also on view will be the Rapier heavy duty fork lift truck, designed for the economical handling of a wide range of goods during manufacture, distributjon, transit and storage. It is made in sizes capable of lifting from 10,000 to 18,000 lb.—loads previously considered too heavy or too bulky for handling by fork lift trucks. A choice of petrol or Diesel engine is offered; with either the travel drive is direct and the hoist and tilting of the mast are by hydraulic power from a pump driven by the engine.

Metals, Minerals and Alloys

Highlights in this week's metal topics are the question whether the general miners' strike in Mexico, due to begin last Tuesday will be avoided, and whether the Bill to suspend the 2c. duty on copper imports into the United States will be accepted by the Senate, as it has been by the House of Representatives. The double-pricing system operating in the United States is generally found very unsatisfactory, and there is an increasing demand for an increase in the U.S. domestic price of lead and zinc to the world price level. It is anticipated in U.S. market circles that following the fixing of ceiling price for tungsten concentrates, similar action will shortly follow in regard to other metals where the supply is scarce, though scrap pricing will probably be announced first. The U.S. Government has stated that after July 1, the system in force during the last war would be re-introduced in the case of the three basic munition metals, steel, copper and aluminium, to guarantee deliveries to defence factories and behind-the-lines industries; civilian goods will have to do the best they can with what is left.

Copper.—The two weeks' strike at the Nchanga mine terminated at the beginning of the week, and the men returned to work quietly. The result appears to be a victory for the company, as the treasurer of the Miners' Union, whose dismissal precipitated the stoppage, has not been reinstated.

The March statistics of the Copper Institute were generally favourable. The U.S. output of crude was 90,671 s.tons (81,598 s.tons in February) and of refined 112,933 s.tons (101,054). Deliveries were 116,793 s.tons (99,485). Stocks fell to 55,609 s.tons (59,324). Production of crude outside the United States was 119,320 s.tons (108,666); the figure for refined was 100,935 s.tons (90,156). Deliveries were 80,287 s.tons (71,467), and stocks were 161,472 s.tons (151,288). The aggregate figures for the world were: crude, 209,991 s.tons (190,264); deliveries, 197,080 s.tons (170,952); stocks, 217,081 s.tons (210,612).

Lead.—Mr. Wilson, the head of the U.S. Defence Mobilization Organization, is being pressed to raise the domestic price to correspond with the export price of 19-22c. Possibly suspension of the import duty of 2½c. per lb., which is urged, will be sufficient. The foreign companies liable to be affected should a strike take place in Mexico are the A.S. and R., The American Metal Co. and the American Zinc Lead and Smelting Co. U.S. stocks of lead at the beginning of March were 126,052 s.tons held by smelters and refiners and 101,483 s.tons by consumers.

An official of the A.S. and R. Co., told the Battery Manufacturers' Association last week that the supply of lead this year would be about 1,100,000 s.tons, of which 440,000 would come from domestic mines, and they would be hard pressed to meet the needs of industry after taking care of defence and armament requirements.

Tin.—The recent decline in the price of tin in the States is beginning to approximate to the price which our correspondent in Kuala Lumpur in his dispatch given elsewhere in this issue considers critical for the maintenance of output at recent levels. Of course, the lower price would have to rule for a considerable time before exercising any notable effect, but Mr. Van Praagh's warning last week as to the very serious effect of the present inflation, must be taken into account, as costs will of course rise if inflation proceeds further. The shortage of power is a more immediate factor of limitation and, as will be seen, our correspondent does not take a very sanguine view of its early solution.

Bolivian exports in February are reported as 2,744 tons, a substantial improvement on January's 2,268 tons. A fresh abortive plot to overthrow the Government and murder the President is reported from La Paz. Incidentally, the statement in the Bolivian remonstrance regarding United States action on prices, that foreign smelters charge $3 less than Longhorn, has now been corrected to $30. The Longhorn output in March was 3,066 tons of primary tin compared with 3,096 tons in February. The R.F.C. reduced its quotation for Grade A tin last week to 147c. per lb. and lowered it further to 142 c. on Tuesday. This action is interpreted in New York as confirmation of the organization's desire to force down the world price. American tin importers foresee a complete shut-down in their business unless the order monopolizing tin purchases on May 1 to the R.F.C. is amended. One importer declared that the United States Government had not ceased stockpiling at all and was acquiring tin at the rate of 45,000 tons a year; the only solution to the problem was for the United States to end stockpiling which, as she now held a five years' supply in her stockpile, would be entirely feasible. Mr. W. C. Stolk stated recently that the American Can Co. would continue its use of "tinless" cans after the present emergency, and was pushing its research to free the American industry from dependence on foreign supplies of tin whatever happens to its price and availability.

Imports of concentrates into the Straits in March were 975 tons compared with 1,054 tons in February. Details are: Thailand 797 tons, Burma 76 tons, Indoneisa 55 tons, Indo-China 20 tons, miscellaneous 27 tons. Total stocks of tin in all forms in Malaya at the end of February was 7,264 tons compared with 7,615 tons a month earlier, and 20,240 tons a year ago.

Zinc.—Zinc production in the United States continues to expand. The mine output in February was 57 748 s.tons of recoverable metal. The daily average rate was the highest since April, 1944. The Defence Minerals Administration has placed restrictions on the delivery and acceptance of zinc concentrates under toll agreements. As in the case of lead the Administration is being urged to bring the "official" domestic price up to the world price level—nominally 27½c. per lb.

The West German Government Import Committee has authorized the import of $1,900,000 worth of zinc ore and concentrates, from Bolivia and Peru.

Chrome.—U.S. domestic price for chrome has been raised to $48/49 per ton.

Manganese.—Negotiations have just been concluded in India between the Government and the Brainard International Company of America to establish a ferro-manganese plant in Orissa by the end of 1952. The minimum annual production capacity is to be 25,000 tons of ferro and the plant is estimated to cost £750,000.

Nickel.—The Canadian Defence Production Department has banned all sales of nickel without Government permit from May 1 next. It applies to primary nickel and nickel chrome. This order is expected to be followed by similar controls on aluminium, copper, lead and zinc.

Quicksilver.—The U.S. price is rather easier and was quoted last week at $215-218 per flask nom. It is reported from Tokio that Japan plans to import 120 tonnes of quicksilver, say 3,470 flasks, but the delivery period is not stated.

Wolfram.—Later advices from the United States are that the ceiling price of $65 per s.ton unit for tungsten concentrates applies to both imported and domestic material and the the c.i.f. buying price without the duty is $57.

Elsewhere there is not much change to note in the general situation but the market is very difficult, and little business is passing in the U.K. Current price may be called 500s. to 530s. c.i.f., but purchase in this range seem to have been chiefly speculative in anticipation of a further recovery in the next few months, or by consumers in urgent need of material. Some important industrial buyers are uninterested at the above figures.

Some particulars about the machinery under which export licences from Portugal for the U.K. are now being issued, is given by our Portuguese correspondent in another column.

In Spain an Executive Committee has been formed to encourage the production and export of wolfram and its derivatives, and to control the trade in these materials. The Committee will also recommend steps to obtain adequate financial compensation for export and to handle all export licences for the ores and metals, as well as import licences for new equipment. It must also guarantee adequate supplies for the home market at fixed prices, construct the necessary port warehouses and control traffic from mines to port.

The London Metal Market

(From Our Metal Exchange Correspondent)

Since the last report the price of tin on the London market has fallen by approximately £100 per ton, whilst the Singapore market has fallen to a slightly lesser extent. The drop, which was not altogether unexpected, was touched off by the R.F.C. reducing their selling price of tin on April 13 to 147c. per lb. This created the impression that the American Government were endeavouring to force the world price of tin down by adjusting the R.F.C. selling price from time to time to below the parity of the Singapore quotation, and this theory has received further support by the reduction on April 17 to 142c. per lb., which again brought the price to below the Singapore parity. Consumer demand in the U.K. has been a little less, but demand from a number of Continental sources appears to have dried up almost entirely, probably due more to the lack of currency than to any desire to stop buying. The other feature has been the very marked lessening in the backwardation, which may prove another step in the further consolidation of market activities.

The position of other metals has remained relatively unchanged from a month ago, although some of the "free" market prices have tended to fall, probably due to the lack of foreign exchange in the countries responsible for the recent volume of purchases. Copper can still be sold at well over the £400 per ton mark, but refined spelter has now fallen below this level, and g.o.b. spelter is worth only about £320 per ton. Lead has been an uninteresting market although spasmodic orders have kept the level for prompt material about £210 per ton.

On Thursday the official close on the tin market was: Settlement price £1,165, Cash Buyers £1,165, Sellers £1,170; Three months' Buyers £1,130, Sellers £1,135. In the afternoon the market was firm. Turnover for the day was 65 tons. Approximate turnover for the week was 710 tons.

The Eastern price on Thursday morning was equivalent to £1,159 per ton c.i.f. Europe.

Iron and Steel

Another advance in iron and steel prices is believed to be imminent; and since the next adjustment must take into account, not only the advance in railway rates which came into force on Monday last; but also the much steeper rise in ore freights from North African and Spanish ports, the next rise in steel prices may be much more substantial than the last.

Consumers, however, are more concerned about the adequacy of supplies than about prices. Inflationary pressures seem to be irresistible, but it will be a disaster if a shortage of iron and steel should curtail operations in the ship building, engineering and kindred trades. That, unfortunately, is the prospect which now confronts the steel using industries.

Ingot production is now rapidly falling, and this at a time when the demand is greater than ever. More material is required for re-armament and it can only be provided by curtailing exports and deliveries to home consumers. Restrictions in both directions have already been imposed. Exports of semi-finished and alloy steels are to be controlled as from Monday next and all types of steel are to come under licensing control on May 14.

In the home trade the pig iron allocations have been reduced, and the stock limit of four weeks' supply has been reduced to three weeks. It is even doubtful if blast furnacemen can provide the smaller tonnages now licensed and the foundry trades are apprehensive of further cuts. In these circumstances the promised statement by Mr. G. R. Strauss, Minister of Supply, is anxiously awaited.

The scrap position is no easier. This would not be such a serious matter if the full capacity of the blast furnaces could be brought into operation. This, unfortunately, is precluded by the shortage of foreign ores, and the result is that in various parts of the country the number of shifts worked in the steel plants has had to be reduced. A further cut of this description is foreshadowed by the Cargo Fleet Iron Co. who state that as from April 28 their light mill which has hitherto been operated on the two shift system will be reduced to only one shift per day.

Similar restrictions in the working of the sheet and re-rolling mills are also a distinct possibility. These mills are now almost wholly dependent on the British steel makers for their supplies of steel semis and maintenance of a regular flow of sheet bars, slabs and billets is becoming very precarious. The demand for sheets, light plates, light sections and bars is overwhelming and it is difficult to place an order for any reasonable delivery date. Everything, in fact, depends on the provision of raw materials. Until these are in ampler supply the steel industry is hamstrung.

Tinplate.—Pig iron output in South Wales and Monmouthshire in the March quarter averaged 25,620 tons per week, representing an annual rate of 1,332,200 tons compared with 1,228,600 tons for the corresponding period in 1950, and of steel a weekly average of 68,160 tons, representing an annual rate of 3,511,800 tons against 3,486,300 last year.

Some anxiety is felt over the supply of sulphur to the new works of the Steel Company of Wales, at Margam and Trostre which are soon coming into use. In Parliament last week the President of the Board of Trade said the Government had calculated that an allocation of 110,000 tons would enable this country to maintain a reasonable level of production, but the interior allocations of 81,000 tons for the June quarter was wholly inadequate, but they were hopeful it would be raised to 100,000 tons.

Coal

Increasing manpower and greater regularity of employment continue to raise the level of production in the coal industry and thus to improve the prospects of the achievement of targets. In the week ended April 14 there was a further addition of 400 to the number of wage earners on colliery books; the number of shifts worked per wage-earner per week jumped to 5.14 compared with 3.87 in

Easter week; and the O.M.S. at the coalface recovered from 3.11 tons to 3.20 tons. Each of these factors has contributed to deep-mined weekly outputs averaging over 4,400,000 tons compared with the pre-Easter rate of 4,160,000 tons per week and brought the cumulative total of pit coal to date to 58,200,000 tons as against 56,900,000 tons in the corresponding period of 1950.

APRIL 19 PRICES

COPPER

Electrolytic...	£210 0 0 d/d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid	£160 0 0 d/d
Soft empire, including secondary lead ...	£160 0 0 d/d
English lead	£161 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid ...	£160 0 0 d/d
G.O.B. spelter, domestic	£160 0 0 d/d
Electrolytic and refined zinc	£164 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£390 per ton
Crude, (70%) ...	£305 per ton

NICKEL

99.5% (home trade)... ...	£406 per ton

OTHER METALS

Aluminium, £124 per ton.	Palladium (scrap), £8 oz.
Bismuth, 22s. 6d. lb.	Platinum, £27/£33 5s. nom.
Cadmium, 17s. 3d./18s. lb.	Rhodium, £45 oz.
Chromium, 5s. 3d. lb.	Ruthenium, £30 oz.
Cobalt, 15s. 6d. lb.	Quicksilver, £73 10s./£74 ex-warehouse.
Gold, 248s. f.oz.	Selenium, 25s. nom. per lb.
Iridium, £65 oz. nom.	Silver (bar), 78¼d. f.oz. spot and forward.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Tellurium, 19s. lb.
Osmiridium, £35 oz. nom.	
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	60% 13s. per lb. c.i.f. 50% 12s.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£11 per ton c.i.f.
,, ,, (concentrates)	£11 per ton c.i.f.
,, ,, Refractory	£10 12s. per ton c.i.f.
Baluchistan Metallurgical ...	£11 11s. per ton c.i.f.
Magnesite, ground calcined ...	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Manganese, Best Indian ...	(Nominal)
Molybdenite (85% basis) ...	(Nominal)
Wolfram (65%), U.K. ...	500s./530s. c.i.f. nom.
Tungsten Metal Powder (for steel manufacture) ...	35s. 3d. nom. per lb. (home)
Ferro-tungsten	33s. 3d. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 18s. 9d. per ton
Ferro-manganese, home ...	£34 2s. 4d. per ton
Ferro-manganese, export ...	Nom.
Brass Wire	2s. 4½d.
Brass Tubes, solid drawn ...	1s. 10⅝d.

Mining Men and Matters

Sir Archibald Forbes, deputy president of the Federation of British Industries, has been elected president of the Federation in succession to Sir Robert Sinclair, who retires after holding the presidency for two years.

Mr. A. T. Gough and **Mr. Frank Byers** have been appointed directors of the Rio Tinto Co.

Mr. H. J. G. Hare has resigned from the board of Paringa Mining & Exploration.

Dr. William Reid was nominated as the next president of the Mining Institute of Scotland at a meeting held on April 4 in Edinburgh. **Dr. G. Hibberd** and **Mr. D. Jackson** of Glasgow were nominated vice-presidents. The elections will take place at the annual general meeting to be held on May 26 in Glasgow.

Dr. J. H. Schulman has been elected a director of Imperial Smelting.

Mr. C. F. S. Taylor has resigned from the board of Anglo American Corporation of South Africa. He has also resigned from the managing directorships and from the Boards of Rhokana Corporation, Nchanga Consolidated Copper Mines, Rhodesia Broken Hill Development Co.; and from the Boards of Rhodesian Copper Refineries, Rhodesian Anglo American, Mufulira Copper Mines, Consolidated Mines Selection Co. and Lydenburg Estates.

Mr. A. Comar Wilson has been appointed a director of Daggafontein Mines in place of Mr. J. G. N. Strauss, retired.

Tanganyika Concessions has announced the constitution of its new board, which is as follows: M. Hely-Hutchinson (chairman and managing director), the Hon. A. O. Crichton, G. C. Hutchinson, Sir Robert J. Hudson, Sir Thomas E. Robins, T. P. M. Cochran, A. Pinto Basto, E. P. Van der Straeten, F. J. A. Guillaume, H. J. Robiliart, H. B. Lake and George Murname.

The Iron & Steel Institute will hold its annual general meeting from May 30 to June 1, both days inclusive.

Royal Society of Arts has announced that the Cadman Memorial Lecture will be delivered by Sir Andrew Bryan, who will speak on "Safety in Mines," on Wednesday, April 25, at 2.30 p.m. at The Royal Society, Burlington House, Piccadilly, W.1. Mr. Philip Noel-Baker, will preside.

Business Items

Mr. A. S. Grant has been elected a director of Climax Rock Drill & Engineering.

Sir Edward D. A. Herbert has been elected a member of the board of the Midland Bank, and of the board of the Midland Bank Executor & Trustee Co.

The death has been announced of **Mr. R. de H. St. Stephens,** one of the directors of Climax Rock Drill & Engineering Works.

The death is announced of **Mr. Sidney Wolfe** who was, until his recent resignation on the ground of ill-health, chairman of the board and governing director of Wolfe Electric Tools.

The Commercial Bank of Australia has opened a branch at Raglan, New Zealand.

National Bank of India has opened a branch at Khulna, Eastern Pakistan.

G. E. Simm (Machinery) Ltd., East Parade, Sheffield, 1, have been appointed as sole sales representatives for the Holset range of flexible rubber block couplings, resilient gears and hydraulic torsional vibration dampers, as manufactured by W. C. Holmes & Co., Ltd., Huddersfield.

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The Mining Markets

(By Our Stock Exchange Correspondent)

Equity shares and those of companies operating overseas remained strong in spite of the incidence of the end of the account. Recent market rumours that the post-budget pace was "too good to last" were proved wrong. On Tuesday, a slight hesitation occurred as open positions were closed, but the market finished firm in late dealings. Wednesday saw all round gains in leading issues, and even the gilt-edged market recovered from its recent despondency.

Oil shares were one of the focal points of interest. Shell Transport and Canadian Eagles both recorded sharp gains on strong buying; many investors preferred bearer shares, thus avoiding stamp duty. Moderate buying of Trinidad Leaseholds on hopes of a good interim dividend caught the market short of stock, and the shares jumped disproportionately to the volume of buying. Ultramar recorded a slight fall on the week. Production of the operating subsidiary S.A.P. Las Mercedes reached a new peak in March of 688,886 bbl. Average output per day was, however, almost identical with that for February. Of 19 wells drilled during the quarter to March 31, 13 were abandoned. The six completed wells were all on the Mercedes field, while all except one of those abandoned were on other fields or outlying areas.

Interest in Kaffir shares continued. This was stimulated by the March quarterly figures from Union Corporation and Anglo American Corporation published during the week. Both these interesting returns show income from premium sales of gold as more than double that received for the December quarter. This source of income is of great importance as an offset to rising costs and as a stabilizing factor in dividend payments.

In the Orange Free State section the limelight was stolen by Geoffries. The borehole TV3 being put down by the company north-west of Odendaalsrus passed through a series of reef bands between the depths of 5,075 and 5,511 feet returning a variety of values up to 4,118 in.-dwt. Drilling continues. The shares jumped 9s. 6d.

Rumours of a heavy demand for gem stones in the first quarter of this year were reported last week. Confirmation was received after going to press. De Beers report gem sales of £11,300,000 and industrial sales of £2,900,000. Although the latter shows a sharp reduction from the exceptional figure achieved in the December quarter, it is still well above the individual amounts for the other three quarters of last year, and can be considered as very satisfactory.

The prices of Rhodesian gold shares rose on rumours that Southern Rhodesia may soon sell some of its gold in the world premium markets. Such a move would be of great assistance to some of the hard pressed low grade producers.

Australian gold shares were a quiet market. Paringa has again closed down its mill. This was reopened last February to treat Mount Charlotte dump rock as an experiment. This has proved uneconomic owing to ever-increasing costs. The shares eased to 9d. on the news.

Base metal shares followed the general upward trend. Among coppers Rhodesian Selection were popular, rumours of an impending change of domicile being freely canvassed.

Rio Tinto rose on hopes of an increased dividend and expectations of a good market for the pyrites produced by the Spanish property. Selection Trust returned to favour. Good reports of progress on the Tsumeb mine in South West Africa, sustained the demand for copper, and the recovery of Ultramar brought in investment buying.

Lead/zinc shares were also cheerful. Among Barriers, Mount Isa took the lead. The company is registered in Australia, and the property produces copper as well as lead, zinc and silver. Some city circles believe that base metal shares have not yet fully responded to inflationary influences and forecast much higher prices. While this form of gossip should be treated with reserve, the statistical position of base metals is very strong.

FINANCE	Price April 18	+ or − on week
African & European	3⅛	+⅛
Anglo American Corpn.	8⅞	+⅛
Anglo-French	23/9	
Anglo Transvaal Consol	41/3	+7½d
Camp Bird	14/6	−1/-
Central Mining (£1 shrs.)	48/4½	+1/3
Consolidated Goldfields	2⅛	−⅛
Consol. Mines Selection	35/-	−1/-
East Rand Consols	5/-	+1/-
General Mining	6⅛	
H.E. Prop	40/-	
Henderson's Transvaal	10/6	+1½d
Johnnies	3⅛	+⅛
Rand Mines	7⅞	+¼
Rand Selection	45/-	
Union Corporation	11⅛xD	−¼
Vereeniging Estates	6⅛	+¼
Writs	35/-	−7½d
West Wits.	2⅛	
RAND GOLD		
Blyvoors	54/-	+3d
Brakpan	22/9	+6d
City Deep	3⅛	+⅛
Consol. Main Reef	2⅛	−⅛
Crown	4⅜	−⅛
Daggas	3⅛	−⅛
Dominion Reefs	2/-	−1½d
Doornfontein	26/6	+10½d
Durban Deep	4⅛	+⅛
E. Daggas	29/4½	+1/3
E. Geduld (4/- units)	2⅛	−⅛
E. Rand Props.	4¼	−⅛
Geduld	8¼	+¼
Grootvlei	49/9	+9d
Libanon	18/3	+3d
Luipaards Vlei	26/-	+6d
Marievale	23/9	+6d
Modderfontein B	6/7½	−1½d
Modderfontein East	2⅛	
New Kleinfontein	36/3	+7½d
New Pioneer	25/3	+3d
Randfontein	21/9	+6d
Robinson Deep	19/-	+6d
Rose Deep	43/9	+7½d
Simmer & Jack	7/9	+3d
Springs	12/9	+6d
Sub Nigel	3⅛	−⅛
Van Dyk	18/-	+3d
Venterspost	33/1½	+7½d
Vlakfontein	22/9	+9d
Vogelstruisbult	28/-	+1/-
West Driefontein	6⅛	−¼
W. Rand Consolidated	48/9	+1/3
Western Reefs	43/9	+1/3
O.F.S.		
Alpha F.S.A.	14/6	−3d
Blinkpoort	26/3	
Central Mining F.S.	5/9	+3d
Freddies	17/3	
Freddies N.	12/7½	
Freddies S.	12/10½	+1½d
F.S. Geduld	3⅛	
Geoffries	27/-	+9/6
Harmony	26/3	+1/3
Lydenburg Estates	11/9	
Middle Wits	23/9	+2/6
Ofsits	2⅛	+⅛
President Brand	24/9	
President Steyn	17/9	−3d
St. Helena	36/10½	+7½d
U.F.S.C. & G.	11/-	+1½d
Virginia Deb.	70	−3
Virginia Ord	15/-	+7½d
Welkom	44/4½	+7½d
Western Holdings	3⅛	+⅛
WEST AFRICAN GOLD		
Amalgamated Banket	2/7½	
Ariston	7/7½xD	+1½d
Ashanti	29/-xD	+6d
Bibiani	12/3	+4½d
Bremang	4/-	
G.C. Main Reef	4/1½	+1½d
G.C. Selection Trust	10/-	+3d
Konongo	2/9	+3d
Kwahu	5/-	−3d
London & African Mng.	2/4½	−1½d
Lyndhurst Deep	1/4½	−3d
Marlu	3/-	+6d
Nanwa	1/1¼	
Taquah & Abosso	7/6	−6d
AUSTRALIAN GOLD		
Boulder Perseverance	3/9	
Gold Mines of Kalgoorlie	16/6	
Great Boulder Prop.	7/3	+3d
Great Western Consol.	2/-	
Lake View and Star	22/3xD	+3d
Mount Morgan	23/-	
North Kalgurli	19/-	
Paringa	9d	−1½d
Sons of Gwalia	12/6	−9d
South Kalgurli	10/3	
Western Mining	8/-	+1½d
Wiluna	11/9	
MISCELLANEOUS GOLD		
Cam and Motor	37/6	+9d
Champion Reef	11/9xD	−1½d
Falcon Mines	12/6	+3d
Globe & Phoenix	25/6	+3d
MISCELLANEOUS GOLD		
G.F. Rhodesian	10/3	+4½d
London & Rhodesian	5/7½	+4½d
Motapa	4/-	+7½d
Mysore	6/6xD	
New Guinea	1/10½	+1½d
Nundydroog	9/9	+4½d
Geregnm	4/6	+1½d
Oroville	13/9	+9d
St. John d'El Rey	38/9	−1/3
Zams	35/3	
DIAMONDS		
Anglo American Inv.	4⅛	+¼
Casts	38/9	+1/6
Cons. Diam. of S.W.A.	3⅛	+¼
De Beers Defd. Bearer	62/-	+1/3
De Beers Pfd. Bearer	17⅛	+⅛
COPPER		
Chartered	69/-	+3d
Indian Copper	5/4½	+1½d
Messina	5⅛	+⅛
Nchanga	7⅛	+⅛
Rhod. Anglo-American	65/3	+3/-
Rhodesian Selection	40/3	+4/3
Rhokana	21⅛	+⅛
Rio Tinto	24⅛	+1⅛
Roan Antelope	21/6	+2/-
Selection Trust	51/3	+6/3
Tanks	46/-	−6d
Tharsis Sulphur Br.	56/3	+2/6
TIN (Eastern)		
Anglo-Burma	4/4½	
Aver Hitam	27/9	+3d
Bangrin	35/-	+1/-
Gopeng	15/4½	+4½d
Hongkong	14/6	−1/3
Ipoh	32/-	+3d
Kamunting	13/3	+1/6
Kepong Dredging	14/7½	
Kinta Tin Mines	17/9	+6d
Kramat Pulai	4/9	
Malavan Dredging	25/3	
Pahang	18/-xD	+4½d
Pengkalen	10/3	−3d
Petaling	13/1½	
Rambutan	18/9	
Siamese Tin	23/-	+6d
Southern Kinta	15/1½	+10½d
S. Malayan	30/-	+3d
S. Tronoh	24/3	
Sungei Kinta	19/6	
Tekka Taiping	11/3	−4½d
Tronoh	31/3	+1/3
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	12/-	+6d
Beralt Tin	24/-	+3d
Bisichi	4/9	
British Tin Inv.	17/9	+6d
Ex-Lands Nigeria	8/-	+1½d
Geevor Tin	16/7½	+6d
Gold & Base Metal	4/4½	+1½d
Jantar Nigeria	7/9	+1½d
Jos Tin Area	11/3	
Kaduna Prospectors	4/3	
Kaduna Syndicate	6/9	+3d
London Tin	5/6	
Ribon Valley	1/6	
United Tin	3/1½	+7½d
SILVER, LEAD, ZINC		
Broken Hill South	58/-	+1/6
Burma Corporation	4/-	−1½d
Consol. Zinc	34/3	+1/6
Lake George	28/9	+1/6
Mining Trust	5/10½	+7½d
Mount Isa	43/-	+3/6
New Broken Hill	30/7½	+1/7½
North Broken Hill	78/-	+1/6
Rhodesian Broken Hill	22/6	+1/-
San Francisco Mines	66/-	+2/10½
Tsumeb	3/7½	+3d
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	61/3	+7½d
Associated Manganese	78/6	+2/6
Chinese Engineering	2/3	
C.P. Manganese	61/9	+2/9
Natal Navigation	6⅛	−¼
Wankie	21/3	−3d
Witbank Colliery	87/6	
CANADIAN MINES		
Dome	$32	+1
Hudson Bay Mining	$118	+8
International Nickel	$79½	+2⅛
Mining Corpn. of Canada	£7⅛	+¼
Noranda	$158	+3
Onemont	£9⅝	+¼
OIL		
Anglo-Iranian	5⅞	+¼
Apex	46/10½	+7½d
Attock	25/-	−7½d
Burmah	56/3	+1/3
Canadian Eagle Bearer	38/6	+3/1½
Mexican Eagle	25/3	+3d
Shell	4⅛	+⅛
Trinidad Leasehold	28/9	+3/9
T.P.D.	31/3	
Ultramar	35/6	−7½d

Company News & Views

Union Corporation's Spread of Interests

The profit margin of the Union Corporation, like that of other Kaffir Houses, is sensitive to Market trend, and, bearing in mind the subdued conditions which prevailed last year, earnings were satisfactory.

This prominent member of the South African group distinguishes itself with its annual report in that it gives interesting statistics regarding trade cycles, world gold production and figures of gold holdings of various countries. This is all additional to the detailed information of its own stewardship and the working results of the various mines it controls. These include Geduld, East Geduld, Marievale, Grootvlei and Van Dyk, on the Rand and St. Helena, the prominent Orange Free State developing mine. Other ventures include the San Francisco Mines of Mexico, Chrome Mines of Africa, Tsumeb Corporation, Bay Hall Trust, British Enka and S. A. Pulp and Paper. Additionally interests are held in undertakings prospecting and exploring districts of the Transvaal, Tanganyika and elsewhere.

This wide spread endows the Union Corporation with many advantages and its latest accounts for 1950 confirm that its financial position has been strengthened during the past year. The balance-sheet discloses net liquid assets of £1,667,000 against £1,349,000. There are investments with a book figure of £5,580,839, the market value of which shows a substantial increase over the balance sheet item. In addition there are holdings in U.K. and South African Government securities of £5,031,730, with a market value of £5,083,800. Tax and reserve certificates account for a further £1,800,000, money at call £1,350,000 with cash in hand of £5,959,328. Assets altogether total £19,890,615.

Earnings last year showed a slight falling off, the gross figure amounting to £1,519,366, but the amount provided for U.K. income tax and profits tax was smaller at £550,400, so that the net amount available, after tax was £96,249 higher at £927,319. After placing £300,000 to reserve, the total distribution for the year was repeated at 6s. per share tax free. This absorbed £558,000 and left a balance of £69,319 which was added to the carry forward at £282,327.

E.R.P.'s Development at Depth

Satisfactory progress was made last year at the East Rand Proprietary—the big producer of the Central Mining group—in connection with the scheme for opening up the mine at depth. All phases of work associated with the extension of operations below the 8,000 ft. level horizon were actively pursued, and the annual report for 1950 states that the major items were shaft sinking, power supply and improvements to the reduction plant, etc. Good progress was made with the shafts from the 58th level horizon and values exposed in pilot winzes on reef have been very satisfactory.

The footage of development generally on the mine was almost entirely confined to the eastern and western sections; it totalled 54,340 ft. and of the 19,470 ft. sampled. 50.4 per cent was payable of 7.3 dwt. New ore opened up was not sufficient to replace the amount milled and the reserves declined by 1,375,000 tons to 7,055,000 tons, value being unchanged at 4.8 dwt., but the report says that this drop was not unexpected and the present aggregation is considered adequate for the needs of the mine.

There was a small increase in the tonnage milled last year—2,653,000 tons of a slightly lower grade, 4.027 dwt. Revenue per ton rose by 7s. 8d. to 50s. 10d., but nearly half of this increase went to meet the 3s. 7d. per ton rise in costs at 32s. The working profit of 18s. 10d. was 4s. 1d. higher, which was reflected in the total at £2,502,816—an increase of £546,052. Taxation called for £310,451 more at £860,829, but the amount allocated for capital expenditure was lower at £537,457. Shareholders received a total dividend of 5s. a share against 4s. 3d. The December payment was made on a bigger capital following last year's new issue. After these payments there was a surplus of £139,556 from the year's operations.

City Deep's High Profit Figure

The benefits derived from the acquisition of the Nourse Mines, coupled with the increased gold price for the whole of the year, were reflected in the mining and milling results of City Deep during 1950.

This old producer of the Central Mining group dealt with a higher tonnage last year at 1,962,000 against 1,827,000 tons. The grade was slightly reduced at 4.269 dwt., but revenue per ton rose by 8s. 3d. to 54s. which was more than sufficient to buttress the rise of 3s. 4d. per ton in costs at 39s. 2d. Profit per ton was 4s. 11d. higher at 14s. 10d. and the total of £1,455,203 was £549,117 more than in the previous year. Taxation was more than double at £562,635 against £254,619. Dividends for the twelve months were stepped up to a total of 7s. compared with 4s., absorbing £709,391, and the surplus of £197,314 increased the carry forward to £665,121.

Compared with the previous year, slightly more development was done—59,720 ft., but the footage sampled, 24,785, was rather less while the pay ratio was lower being 48.1 per cent against 53 per cent. The ore mined during the year was greater by 47,761 tons and the payable reef developed amounted to 1,071,800 tons with a value of 5.6 dwt. Ore reserves were increased by 35,000 tons to 6,012,000 tons of 5.8 dwt.

Three reefs are being developed—Main Reef, Main Reef Leader and the South Reef, with satisfactory results. Work in the lower levels of the western part of the mine will be restricted until the new sub-incline shafts have been further advanced. It is anticipated that there will be a lowering of grade but the outlook generally appears to be satisfactory. The labour complement is, however, below requirements, and although power shortage is being experienced on the Rand, steps are being taken to minimize its effect.

Rietfontein's Improved Results

The mining area of Rietfontein Consolidated—one of the minor undertakings of the Gold Fields group—is small in comparison with the average Rand producer. It is situated to the north of the Knights property and its area is underlain by a series of four reefs. It has been prosperous since it started milling in 1935, and has paid over £1,280,771 in dividends. Milling profit per ton has varied and last year, thanks to the higher price for gold, it worked out at 24s. 1d. per ton—the highest yet recorded, as likewise the total net profit of £385,003. The mill throughput of 324,000 tons was higher than last year but exactly the same as in 1948. The yield, which has been consistent, was 4.336 dwt. but the revenue rose to 54s. 9.7d. as against 44s. 8.8d. the previous year. The higher working costs of 4s. 3d. per ton at 30s. 8.7d. were comfortably met by additional revenue. Dividends for the year were increased to 3s. 3d. as against 2s. 3d.

Development results were again satisfactory, although the percentage payability and value were slightly lower; the footage accomplished was 21,247 against 22,194, and of the 8,570 ft. sampled, 38.7 per cent proved payable of an average value of 8.1 dwt. per ton. The fully developed ore reserves showed a decrease of 53,000 tons at 607,000, the value being slightly higher at 5.3 dwt.

Some time ago a policy was inaugurated of reclamation, exploratory development and stoping in the upper levels of the mine and in the old eastern section. This was continued last year with gratifying results. In order to facili-

tate work in the north-west section it has been decided to sink the No. 5 incline shaft to 1,094 ft. Development in the lower levels adjacent to the granite is still retarded by considerable faulting.

West "Vlaks" Drilling Programme

Except for surface drilling operations, the West Vlakfontein is on a caretaking basis. The company's property, as its name implies, lies to the west of Vlakfontein Gold, and the arrangements made with that company, whose consulting engineer acts as technical adviser, are continuing.

The annual report for 1950 brings up to date information with regard to the boreholes being sunk. They have been undertaken on the recommendation of the technical adviser following the disappointing disclosures on both the Main and Kimberley Reefs in the eastern section.

The two particular holes on which work is being concentrated are W.V.3 and W.V.4, on the western half of the mining area. W.V.3 was continued to a depth of 5,390 ft. and intersected the May reef and Lower May reef, both disclosing negligible gold content, at depths of 4,934 and 4,956 ft., respectively. At 5,279 ft. the bore entered the Kimberley Shales and was still being drilled within these beds at the end of last year. Borehole No. W.V.4 is situated approximately 9,000 ft. north-west of No. 3 and was started at the beginning of June, 1950. At the end of last year it had reached a depth of 4,546 ft. Sediments of the Karoo System were encountered to a depth of 161 ft. and from that depth to 591 ft. the borehole traversed the Dolomite series of the Transvaal System. Quartzites of the Black reef series were intersected between depths of 591 ft. and 601 ft. and at the latter depth the bore entered the lavas of the Ventersdorp System. At 3,294 ft. it entered the Kimberley-Elsburg series of the Upper Witwatersrand System and at 3,553 ft. a dolerite dyke was encountered in which it was still being drilled at the end of the year.

The mine is being kept unwatered so that underground operations could be re-started without delay by an arrangement with the Vlakfontein Gold. The balance sheet at December 31, 1950, shows cash assets of £61,159 against £118,654, while current liabilities total £6,272 against £17,798. The issued capital remains at £1,687,579 in 2s. 6d. shares.

Gold Coast Selection's Good Results

If the West African Gold share market has been disappointing during the last eighteen months, the same cannot be said about the results of the Gold Coast gold mining companies which comprise the investment portfolio of Gold Coast Selection Trust. The higher earnings of Amalgamated Banket Areas, Ariston Gold, Bremang Gold, Gold Coast Main Reef and Marlu Gold Mining Areas, are reflected in the Trust's increased income from dividends and interest which rose during the year ended September 30, 1950, by £35,206 to £113,373. In spite of the general lack of market interest in "West Africans," profit on investment sales improved by £5,754 to £28,514. Expenses showed a modest increase with the exception of interest payments which decreased from £2,182 to £177 following payment of a loan of £55,000. Thus profit before taxation was higher at £134,266 against £92,489.

Although the better results called for £31,774 against £21,359 in taxation, the interim dividend of 7½ per cent paid last September was covered by earnings equal to over 24 per cent. The sum of £75,000 was transferred to the reserve account, which now amounts to £375,000, leaving the carry forward lower at £320,297 compared with £323,742.

Since the fiscal year-end the trust has sold the Offin/Jimi alluvial areas to the Bremang Gold Dredging company for £91,650 in stock units of Bremang and a royalty of 4 per cent of the gross value of the gold recovered from these areas.

While the benefits of devaluation are now being partially offset by rising costs, this is a factor in evidence in other goldfields. On the other hand, the granting of the new Constitution to the Gold Coast has cleared the political atmosphere, and this, together with an improved labour supply to the mines, should encourage the investor to give the West African gold share market the attention it deserves.

A.B.A.'s Results: A Study in Progress

An absorbing week-end's reading is in store for shareholders of Amalgamated Banket Areas whose report and accounts for the year ended September 30, 1950, covering 24 pages complete with illustrations, has now been issued. The publication of this booklet on A.B.A.'s activities during the year has been made necessary as it includes a good deal of information about the future plans for the development of the properties of Gold Coast Banket Areas and South Banket Areas acquired under an agreement concluded in September, 1949, but which did not come into effect until January 1, 1950. A map showing the consolidated properties of Amalgamated Banket, which now covers 85 square miles, has also been included in the report.

In effect, the amalgamation scheme has brought five sections within the company's working areas. Pepe (opencast), Akoon, and Taquah/Mantraim which comprise the original A.B.A. properties, the Fanti Mine formerly belonging to Gold Coast Banket Areas, and the Tamsoo mine acquired from South Banket areas. No production, however, was obtained from the two new properties except for approximately three months from the Fanti Mine.

During the year ended September 30, 1950, operating results in the A.B.A. showed an all-round improvement. Tonnage crushed increased to 537,690 tons compared with 506,539 tons in 1949; oz. of gold recovered rose to 79,002 against 73,408 and the yield in dwt. per ton was also better at 2.940 against 2.898. However, the average cost per ton milled, including development, was up at 26s. 1d. against 22s. 9d. Development during the year carried out on the Akoon and Taquah/Maintraim sections showed a modest gain of 592 ft. to 8,681 ft. over the previous year, the major development work being concentrated in the latter section.

Mechanization at A.B.A. has been progressing rapidly and all production is now mechanically handled in stopes where the dip is too flat for the broken ore to run freely. This has permitted a decrease in the labour force but has in turn raised the problem of training a new category of mechanically minded employees.

Fanti Section.—At the Fanti Mine, milling continued from the date the amalgamation took effect namely, January 1, 1950, and closed down some time in the following March. During this time (on account of A.B.A.) it crushed 23,460 tons from which 5,640 oz. of gold were recovered giving an average yield of 4.81 oz. per ton. Since the mill closed, development has increased considerably and for the nine months ended September 30, 1950, footage advanced totalled 6,813 ft. Of this latter figure 4,603 ft. was in drives of which 3,917 ft. were sampled revealing that 1,488 ft. were payable averaging 6.3 dwt. over 37 in. Ore reserves at Fanti were recalculated to conform to the pay limit used at A.B.A. of 4.2 dwt./36 in. with the result that ore reserves increased by 39,016 tons to 338,608 tons averaging 5.6 dwt. over 36.6 in. at the company's fiscal year end.

Tamsoo Section.—The important development in connection with this recently acquired property is the dismantling and re-erection of the aerial ropeway between the Tamsoo Mine and the Central Mill. It is expected to complete this task this month which will provide the com-

pany with another important source of revenue. Of the 3,542 ft. advanced since January, 1950, 2,436 ft. of driving were sampled of which 396 ft. proved payable averaging 4.3 dwt. over 36 in. Ore reserves at Tamsoo have also been recalculated to conform with A.B.A.'s pay limit and at September 30, 1950, were estimated at 531,488 tons averaging 5 dwt. over 43.4 in.

The accounts of Amalgamated Banket Areas reflect the acquisition, as from January 1, 1950, of the undertakings mentioned above and profits have been charged with the full cost of the heavy maintenance expenditure on the Fanti and Tamsoo Mines as well as with the cost of financing their respective development programme. Nevertheless, financial results have never been better. After charging depreciation of plant and machinery, and development expenditure written off, totalling £136,654 and all other expenses, net profit amounted to £203,402 which is a distinctly favourable contrast to the £1,633 earned in 1949. From the £205,035 available, expenditure pending resumption of production at Fanti and Tamsoo Mines absorbed £64,297, expenses connected with amalgamation and the reduction of capital required £14,175, and after accounting for a small appropriation of £111, the remainder, £126,452, was carried forward.

Plans over the next two years the chairman, Major-General W. W. Richards, stated envisaged a production of 40-45,000 tons of underground ore and 15-20,000 tons of Pepe (opencast) ore per month. The designed treatment capacity of the Central Mill is 60,000 tons per month, so that, with certain modifications, adequate milling capacity should be available. Nor does there appear to be any difficulties standing in the way of achieving this target. In the first six months of the current year, plant performance has continued to improve, the results for March of this year showing that tonnage crushed had risen to 56,421 tons which compares with an average monthly milling rate of 44,807 tons during the year ended September 30, 1950.

The outlook for Amalgamated Banket Areas is promising. The Tamsoo Mine should soon be a producing and profit earning section, and the Fanti Mine should also cease to be a liability in 1952 when an aerial ropeway, similar to that between Tamsoo and the Central Mill, will be constructed between Fanti and the Central Mill. The amalgamation scheme has consolidated the company's position, the labour relations and supply is adequate and, as said elsewhere in these columns, the much improved political atmosphere in the Gold Coast following the granting of a large measure of self-government makes this company an attractive proposition.

Marlu Turns the Corner

The difficulties which Marlu Gold Mining Areas experienced in getting back into its stride after mining operations were suspended when the Gold Coast Mines Concentration Scheme came into effect in 1943 are well on the way to being overcome.

During the year ended September 30, 1950, tonnage crushed increased by over 90,000 tons to 500,740 in spite of a longer ore haulage to the treatment plant. Recovery improved to 85.9 per cent (83.6 per cent), milling costs per ton dropped 8d. to 6s. 11d. and the output of gold rose to 52,036 oz. compared with 42,832 oz. Although the average grade of ore milled was lower by 0.1 dwt., due to the improved recovery performance the average yield per ton at 2.078 dwt. (2.105 dwt.) was very little lower than previously.

The better production results and plant performance favourably repercussed on the profit and loss account and gross revenue mounted to £642,533 against £392,626. Mine expenditure was, of course, higher, and after deducting all expenses, net profit was £187,570 as against a loss of £12,045 in 1949.

The net profit available was applied to reducing the company's debit balance, which had grown from £69,405 in 1943 to £214,758 in 1949, and this now stands at the relatively low figure of £27,188. In fact, Marlu should soon be in a position to return to the dividend list, and this desirable step was brought nearer by net earnings of £62,312 for the first six months of the current year. This figure would have been improved upon, but at the beginning of the current year a mishap to one of the excavators occurred, but this difficulty has now been overcome.

Results from the Broomassie area have been disappointing, and it has been decided not to sink a shaft which was at one time considered as a joint venture with Ariston Gold Mine.

At December 30, 1950, total ore reserves (including indicated and probable ore) totalled 3,373,637 tons, averaging 3.2 dwt. per ton, compared with 4,041,000 tons, averaging 3.3 dwt. per ton.

The chairman, Major-General W. W. Richards, provided a good guide to the future outlook for this company when he stated that provided no unforeseen events intervene, and subject to capital requirements for proposed underground mining, future profits should place the company in a position to resume dividend payments.

British Aluminium Progress

The multifarious uses to which aluminium is put give prominence to the 1950 annual report of the British Aluminium Co. It is the only producer in the country of the virgin metal—while it manufactures a wide variety of products. It has been engaged in a large development scheme, which has called for heavy capital expenditure and the operation of infusing new money into the group had not been completed by December 31 last when the balance was struck. The issue of 2,000,000 new Ordinary £1 shares at 34s. was made in November and when the accounts closed only 6s. per share had been paid up. Even with only £600,000 of new money, the cash balance had grown to £1,478,558 compared with £386,193 and the Bank overdraft was reduced from £1,017,490 to £362,150. Capital expenditure commitments at the end of the year totalled £905,144 but the renewal and modernization of plant and increase of capacity are still going forward. Group trading balances were £551,000 higher at £2,089,259, and the net profit was £56,336 better at £604,896 after providing £720,547 (against £478,262) for taxation. It left ample cover for the £198,000 required for the Ordinary dividend, with last year's issue ranking for half the final 6 per cent. The old capital again received 10 per cent.

Over the year the consolidated balance sheet total has grown from £17,468,709 to £20,012,595—an increase derived partly from the influx of new money and partly from the growth of fixed assets. The total of current assets is £10,060,769 compared with £8,448,988, while current liabilities, including the overdraft, have fallen from £4,489,710 to £3,769,525; the net surplus being £6,291,244, compared with £3,959,278.

The cost value of the fixed assets is up from £16,172,628 to £16,987,215, but after deducting accumulated depreciation, the written-down book value is £12,028,385 or £415,477 more than a year ago. Investments in allied companies, etc. figure at £1,353,468. Reinforced by share premiums of £1,310,682 group reserves totalled £9,474,548 at the end of the year and included £506,912, income tax liability for the current year.

The outlook appears to be satisfactory. With the big rearmament programme there is no chance of supply outstripping demand. The foundry trade is making important demands while any check to civilian needs is only conditional by supply.

Rand Mine Returns for March

As a result of the longer month, the Rand gold mining returns for March made a more encouraging showing than those for February. Tonnage crushed was up in the case of all the mines and 27 announced higher profits; those of the remaining producers were lower. The unit cost figure of 21 mines was lower while in the case of 19 it was higher and 2 worked for the same figure as in February.

Not altogether unexpectedly, Blyvoor, the leader in the Central Mining group, announced record tonnages and profit, while shedding 1d. per ton in costs, bringing them down to 45s. Lower profits and higher costs were recorded by City Deep and Rose Deep. Crown Mines costs were 1s. up, but the biggest tonnage helped to increase the profit. Transvaal Gold's profit was the lowest for more than a twelvemonth and the benefits of the consolidation of interests with Glynns are not yet showing themselves. New Modder's costs rose by 2s. 5d., although a slightly larger profit was made.

All the members of the Anglo American group worked at a lower figure of cost and East Daggafontein was the only mine to make a slightly lower profit. Brakpan's costs, which rose by 2s. 4d. in February, were brought down by 1s. 11d. last month and profit increased by £13,000. Larger tonnage, with a drop of 1s. 1d. in costs, resulted in Daggafontein's profit rising by over £45,300.

The best showing in the Gold Fields list was made by Vlakfontein whose profit increased by £7,571 as a result of increased tonnage and a drop of 1s. 5d. in costs. Sub Nigel's rise of £6,000 in profit was entirely due to increased milling. Libanon's increase of £5,900 brought the figure near to the January amount of £52,801. Venterspost's profit was about £5,000 higher, as likewise that of Vogelstruisbult.

An increase of over £20,400 was shown in Grootvlei's profit resulting from a larger tonnage and slightly lower figure of costs. Marievale's profit was over £5,000 better, as also that of Van Dyk. The two other members of the Union Corporation group, East Geduld and Marievale, worked at a lower figure of costs for increased profits.

West Rand, belonging to General Mining, made the best return since October of last year. As a consequence of a drop of 1s. 3d. in costs and increase of 23,000 in tons milled, the profit rose by just over £31,400.

The only mine of the "Johnnies" group to show a small drop in profit was New State Areas. Randfontein's costs were 1d. down and the profit increase, the slight one of £145. Although Rand Leases (Anglo Transvaal) recorded an increase in costs, the bigger tonnage enabled the profit to be stepped up by £21,600.

The March returns for the Rand Mine producers are given below:

Alpine (B).—3,000 tons yielded 614 oz.; profit £597.
Blyvoor.—95,000 tons yielded 66,052 oz.; profit £604,756.
Brakpan.—114,000 tons yielded 21,239 oz.; profit £62,717.
City Deep.—164,000 tons yielded 32,884 oz.; profit £75,066.
Consol M.R.—184,000 tons yielded 25,205 oz.; profit £50,267.
Crown.—272,000 tons yielded 47,722 oz.; profit £111,023.
Daggafontein.—230,000 tons yielded 57,010 oz.; profit £446,211.
Durban Roodepoort.—178,000 tons yielded 30,416 oz.; profit £100,061.
East Champ D'or.—33,000 tons yielded £60,323; profit £11,234.
East Dagga.—98,000 tons yielded 18,076 oz.; profit £88,719.
East Geduld.—144,000 tons yielded 43,202 oz.; profit £352,182.
E. Rand Prop.—212,000 tons yielded 43,249 oz.; profit £170,737.
Geduld.—105,000 tons yielded 15,504 oz.; profit £48,812.
Govt. Areas.—231,000 tons yielded £391,915; profit £60,344.
Grootvlei.—197,000 tons yielded 44,314 oz.; profit £304,730.
Libanon.—86,000 tons yielded 15,759 oz.; profit £51,936.
Luipaards Vlei.—101,000 tons yielded 18,785 oz.; profit £65,393.
Marievale.—61,000 tons yielded 15,221 oz.; profit £76,777.
Modder "B."—54,000 tons yielded 6,165 oz.; profit £9,073.
Modder Deep.—5,000 tons yielded 867 oz.; profit £522. £12,991 revenue from clean-up operations.
Modder East.—122,000 tons yielded 14,219 oz.; profit £38,905.
New Kleinfontein.—106,000 tons yielded 13,844 oz.; profit £45,013.
New Modder.—22,000 tons yielded 2,777 oz.; profit £2,003.
New State.—58,000 tons yielded £97,981; profit £5,021.
Nigel.—36,500 tons yielded 4,880 oz.; profit £2,990.
Randfontein.—320,000 tons yielded £513,437; profit £50,148.
Rietfontein.—27,000 tons yielded 6,070 oz.; profit £32,106.
Robinson.—106,000 tons yielded 17,199 oz.; profit £10,313.
Rose Deep.—81,000 tons yielded 11,520 oz.; profit £22,043.
Simmer & Jack.—121,000 tons yielded 19,271 oz.; profit £31,757.
S.A. Lands.—112,000 tons yielded 19,538 oz.; profit £79,452.
South Roodepoort.—27,000 tons yielded 5,992 oz.; profit £22,534.
Spaarwater.—10,400 tons yielded 2,310 oz.
Springs.—168,000 tons yielded 21,601 oz.; profit £36,645.
Sub Nigel.—66,500 tons yielded 24,306 oz.; profit £147,083.
Transvaal Gold.—30,300 tons yielded 5,255 oz.; profit £1,287.
Van Dyk.—101,000 tons yielded 15,346 oz.; profit £20,787.
Venterspost.—103,000 tons yielded 22,145 oz.; profit £88,187.
Vlakfontein.—37,000 tons yielded 13,783 oz.; profit £80,501.
Vogelstruisbult.—75,000 tons yielded 18,428 oz.; profit £83,021.
Welgedacht.—33,000 tons yielded 4,120 oz.; profit £4,005.
West Rand Cons.—212,000 tons yielded 34,206 oz.; profit £170,113.
Western Reefs.—93,000 tons yielded 21,196 oz.; profit £111,885.
Wit. Gold.—58,000 tons yielded £86,738; profit £6,021.
Wit. Nigel.—10,000 tons yielded £32,232; profit £1,664.

HIS MAJESTY'S COLONIAL SERVICE
KENYA

Vacancies exist for Engineer-Geologist in the Public Works Department, Kenya. The appointments are on contract for four years. The salary scale is £830—£35—£1,005—£45—£1,410 and the point of entry into the scale would be determined according to experience and war service. On satisfactory termination of the contract a gratuity equal to 15% of 9/10ths of the total salary earned during the term of engagement is payable. The rate of income tax is considerably lower than in the United Kingdom. Free passages are provided for the officer, his wife and children on appointment and on termination of contract, up to a maximum of three adult passages in all. Eighteen days local leave is granted per annum and vacation leave is granted at the rate of four and half days for each completed month of resident service. Rent for Government quarters amounts to 10 per cent of salary if furnished and 7½ per cent if unfurnished. Where the rent paid by officers occupying private quarters exceeds these amounts a suitable allowance is made. Candidates should preferably be under 30, but a small allowance may be made for war service. They must hold a University degree with Geology as a major subject. Preference will be given to those who are qualified mining engineers. They must have good all round experience, and must be capable of carrying out geophysical surveys and investigations for the location of sub-surface water supplies by boring shallow wells, etc., and of undertaking the investigation, survey and design of very small works for the conservation and development of surface supplies, particularly by means of earthdams and excavation tanks. Candidates should write, giving brief particulars of age, qualifications and experience to the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith Street, London, S.W.1 quoting reference 27079/18/51.

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UNION CORPORATION, LIMITED

(Incorporated in the Union of South Africa.)

ABRIDGED REPORT OF THE DIRECTORS FOR YEAR 1950

After providing £550,400 for United Kingdom Income Tax and Profits Tax the profit for the year is £927,319, plus £213,008 brought forward, making a total of £1,140,327. The Directors have placed £300,000 to the credit of Exploration Reserve Account, and have declared a final dividend of 4s. 0d. United Kingdom currency per share free of United Kingdom Income Tax, absorbing £372,000, and making, with the interim dividend of 2s. 0d. per share, a total distribution of 6s. 0d. per share free of United Kingdom Income Tax or £558,000 for the year, leaving £282,327 to be carried forward.

Holdings of shares, debentures and other securities have been taken into the Accounts at cost or under but in no case above the market value of December 31 last, or, where no market price exists, above the Directors' valuation. At present market prices these holdings show a very substantial surplus over the amount at which they stand in the Balance Sheet. The Directors, as on other occasions, have thought it expedient to write down the book cost of certain holdings below both cost and market price.

A copy of the Corporation's Annual Trade Cycles Chart, revised to date, is enclosed with the Report.

GOLD MINING INTERESTS

Summary of the operating results for the past year of the Companies operating in the Witwatersrand in which the Corporation is largely concerned:—

	East Geduld Mines Ltd.	Geduld Proprietary Mines Ltd.	The Grootvlei Proprietary Mines Ltd.	Marievale Consolidated Mines Ltd.	Van Dyk Consolidated Mines Ltd.
Tons milled	1,738,000	1,279,000	2,267,000	725,000	1,197,000
Yield per ton (dwt.)	5.99	3.05	4.57	5.03	3.00
Working Costs, per ton	24s. 2d.	27s. 0d.	24s. 2d.	36s. 5d.	32s. 2d.
Working Profit, per ton	51s. 10d.	11s. 7d.	33s. 6d.	27s. 2d.	5s. 8d.
Total Working Profit	£4,505,000	£742,000	£3,800,000	£985,000	£340,000
Net Profit	£2,254,000	£1,251,000	£1,883,000	£545,000	£331,000
Dividends: Total	£2,081,000	£1,205,000	£1,716,000	£412,000	—
Per cent.	115¼	82½	60	18¼	—

The net profit figures include revenue from other sources. Thus East Geduld Mines' dividend income in 1950 on its shareholding in The Grootvlei Proprietary Mines' was £80,640 and Geduld Proprietary Mines' dividend income in 1950 on its shareholdings in East Geduld Mines and The Grootvlei Proprietary Mines was £818,833.

On Van Dyk, development in the No. 5 Shaft area has commenced. Payment of dividends has been suspended in order to finance this Shaft and initial development therefrom.

ST. HELENA GOLD MINES.—During 1950 No. 4 Vertical Shaft was completed and station cutting was carried out on the 2nd to 12th Levels.

Development work from No. 3 Shaft was again retarded by the inter-section of water-bearing fissures which necessitated sealing by cementation. A total of 12,406 ft. was completed. Of the 3,865 ft. on Basal Reef, 2,595 ft. or 87 per cent were payable, having an average assay value of 13.0 dwt. over a width of 25 in. Though the development footage has been disappointingly low for the reason given above, the grade and payability are satisfactory.

It now appears unlikely that development will have progressed sufficiently to enable the reduction plant to be supplied with ore by the middle of 1951 on the substantial scale originally planned, but the plant should be ready to go into commission early in the second half of the year, in the expectation that adequate electric power will be available.

THE WITHOK PROPRIETARY COMPANY.—The borehole in the centre of the Company's property, which was referred to in last year's report, intersected the Main Reef at a depth of 7,161 ft. with a value of 45.4 dwt. over 3.9 in., equivalent to 177 in.-dwt. A deflection of this borehole assayed 29.5 dwt. over 6.3 in., equivalent to 186 in.-dwt. A second borehole is being drilled by the Company in the north-eastern portion of its property and had reached a depth of 1,085 ft. at the year-end.

OTHER MINING INTERESTS

SAN FRANCISCO MINES OF MEXICO.—In the year to September 30, 1950, the absence of labour troubles enabled the Company to treat a record tonnage of 623,000 tons of lead-zinc-silver ore compared with 580,000 tons in the previous year. The substantial recovery in the level of base metal prices which set in around the middle of 1950 has favourably affected the Company's revenue, though taxation in Mexico continues to be a heavy burden upon earnings.

CHROME MINES OF SOUTH AFRICA.—The Company increased its production and sales from the Zwartkop Mine in the Rustenburg area and the Groothoek Mine in the Lydenburg district of the Transvaal. The Company has large orders for future delivery but has been handicapped by the shortage of railway trucks.

TSUMEB CORPORATION.—The net profit of this Company for the year ended June 30, 1950, was £1,495,572. During the year the balance of £780,000 of Promissory Notes outstanding was redeemed and in addition a bonus share dividend of three fully paid 5s. 0d. shares for each share held was paid. On June 1, 1950, an initial cash dividend of 9d. per share on the increased capital was paid and during the current financial year further dividends totalling 4s. 9d. per share have so far been declared.

OTHER INTERESTS

BAY HALL TRUST.—The net profit for 1950 was £70,636 and a dividend of 6 per cent free of tax was declared. The Trust's investments as at December 31 last showed an appreciation of £975,341 over book cost of £2,196,539.

BRITISH ENKA.—During 1950 the Company further increased its output.

SOUTH AFRICAN PULP AND PAPER INDUSTRIES.—During the year production was at full capacity. The net profit for the year, after making provision for taxation and depreciation, amounted to £288,232. Dividends totalling 1s. 10½d. per share have been declared. Construction work has progressed satisfactorily in preparation for further expansion of operations at Enstra, and the erection of the smaller of the two additional paper machines referred to in last year's report is well advanced.

In addition the Company will establish a new pulp and paper mill at the mouth of the Tugela River in Natal to manufacture initially about 100 tons per day of kraft papers. To finance this expansion the Company has obtained a long-term loan of £1,000,000 from the S.A. Mutual Life Assurance Society. It is intended that the balance of the funds required will be raised in due course by an issue of ordinary shares in which the Corporation will participate.

EXPLORATION

CAPITAL MINING AREAS continues to hold prospecting contracts over a large area in the Bethal, Ermelo and Standerton districts.

WESTERN KROONSTAD AREAS is abandoning most of the prospecting contracts which it holds over a large area in the Kroonstad and Bothaville districts of the Orange Free State.

The Corporation itself continues to hold the mineral rights on certain farms in the Orange Free State.

CENTRAL MINERAL EXPLORATION is continuing prospecting operations in the Mlala area of Tanganyika Territory.

Copies of the full Report and Accounts can be obtained on application at the London Office, Princes House, 95, Gresham Street, E.C.2.

WEST RAND CONSOLIDATED MINES, LTD.

(Incorporated in the Union of South Africa)

CAPITAL (Registered & issued): £2,150,000 in 4,2.0,000 Ordinary Shares of 10s. each and 25,000 Deferred Shares of £1 each

DIRECTORS:

SIR GEORGE W. ALBU, Bart. (Chairman). C. S. McLEAN. E. L. LLOYD. M. W. RICHARDS.
W. M. FRAMES. ERROLL G. HAY. C. S. GOLDMAN. N. F. H. RAILING. T. W. T. BAINES.

EXTRACT FROM ANNUAL REPORT TO DECEMBER 31, 1950

Tons milled	2,602,000
Yield (3.251 dwt. per ton)	422,965 f.oz.
Working Revenue	£5,332,791
Working Costs	3,195,101
Working Profit	2,137,690
Additional Revenue	154,289
	2,291,979
Balance at December 31, 1949	278,833
Total Available Profit	£2,570,812
Appropriated as follows:—	
Government and Provincial Taxes	1,001,396
Silicosis Board:	
Further provision against Outstanding Liabilities	25,777
Capital Expenditure appropriated at December 31, 1950	171,231
Ordinary Dividends Nos. 38 and 39, totalling 27½ per cent	£584,375
Deferred Dividends Nos. 29 and 30, totalling £7 15s. 10d. per share	194,792
	779,167
Payment of Special Contribution to the Witwatersrand Gold Mines Employees Provident Fund (Adjustment)	121
Balance to Balance Sheet	593,120
	£2,570,812

ORE RESERVE—The fully developed Ore Reserve, as recalculated at December 31, 1950, amounted to **10,047,000** tons, of an average value of **3.5** dwt. over **48** in. (1949: **10,093,000** tons at **3.6** dwt. over **48** in.)

Copies of the full Report and Accounts are available at the London Office of the Company, Winchester House, Old Broad Street, London, E.C.2.

CROWN MINES, LIMITED

(Incorporated in the Union of South Africa.)

EXTRACTED FROM THE ANNUAL REPORT FOR THE YEAR ENDED DECEMBER 31, 1950.

CAPITAL: £1,000,000 in 10s. Shares, £943,062 10s. issued, fully paid.

DIRECTORATE:

W. H. A. LAWRENCE (Chairman).
P. H. ANDERSON. R. BEAUMONT. W. M. FRAMES.
C. S. McLEAN. G. V. R. RICHDALE. R. S. G. STOKES, C.B.E., D.S.O., M.C.

Tons milled **3,375,000**

		Per ton milled
Total Working Revenue	£7,640,920	£2 5 4
Total Working Expenditure	5,523,728	1 12 9
Working Profit	£2,117,192	£0 12 7
Total Profit for the year	£2,126,286	
Balance unappropriated at December 31, 1949	1,081,456	
Transfer from Shareholders' Contingency Reserve	56,300	
	£3,264,042	

This amount has been dealt with as follows:—

Funds transferred for Capital Expenditure	£103,346	
Taxation	812,293	
Forfeited Dividends Account	56,268	
Dividends declared during the year—No. **98** of **5s. 6d.** per share and No. **99** of **6s. 6d.** per share	1,131,675	
		2,103,582
Leaving a balance unappropriated of		£1,160,460

The Ore Reserve was re-estimated as at December 31, 1950, as follows:—

	Available			Shaft and Safety Pillars			Total		
	Tons	Value Dwt.	Width Inches	Tons	Value Dwt.	Width Inches	Tons	Value Dwt.	Width Inches
Main Reef	139,000	2.9	52.6	—	—	—	139,000	2.9	52.6
Main Reef Leader	7,266,000	4.9	46.2	3,933,000	5.8	47.3	11,199,000	5.2	46.6
South Reef	1,807,000	3.3	51.3	930,000	4.4	52.5	2,737,000	3.6	51.7
Total	9,212,000	4.5	47.2	4,863,000	5.5	48.2	14,075,000	4.9	47.6

Compared with the previous year the available reserve decreased by **323,000** tons, the value being **0.1** dwt. per ton lower and the width unchanged.

The full Report and Accounts (with Plan of Workings) may be obtained from the London Secretaries, A. MOIR & CO., 4, London Wall Buildings, E.C.2.

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(Incorporated in the Union of South Africa.)

Extracted from the Annual Report for the Year Ended 31st December, 1950

CAPITAL—£1,200,000 IN 10s. SHARES £1,162,500 ISSUED FULLY PAID

DIRECTORATE :

W. M. FRAMES (Chairman).
SIR GEORGE W. ALBU, Bt. P. H. ANDERSON. J. BOYD.
M. N. ANDREW COHEN. C. S. McLEAN. G. V. R. RICHDALE.

Tons milled **2,132,000**

		Per ton milled
Total Working Revenue ...	£4,657,995	£2 3 9
Total Working Expenditure	3,248,373	1 10 6
Working Profit	£1,409,622	£0 13 3
Net Profit for the year		£1,405,912
Balance unappropriated at December 31, 1949		590,645
Transfer from Shareholders' Contingency Reserve		2,200
		£1,998,757
This amount has been dealt with as follows :—		
Funds Transferred for Capital Expenditure	£178,672	
Taxation	423,987	
Forfeited Dividends Account	2,208	
Dividends declared during the year—No. **59** of **2s. 9d.** per share and No. **60** of **3s.** per share ...	668,438	
		1,273,305
Leaving an unappropriated balance of		£725,452

The Ore Reserve was re-estimated, as at December 31, 1950, as follows :—

	Available			Shaft and Safety Pillars			Total		
	Tons	Value Dwt.	Width Inches	Tons	Value Dwt.	Width Inches	Tons	Value Dwt.	Width Inches
Main Reef	6,814,000	4.5	68.6	695,000	4.2	67.1	7,509,000	4.4	68.4
Main Reef Leader	77,000	5.6	42.4	22,000	3.7	40.5	99,000	5.2	41.9
South Reef	1,354,000	3.6	41.3	122,000	4.4	41.3	1,476,000	3.7	41.3
Kimberley Reef	1,067,000	3.2	67.0	—	—	—	1,067,000	3.2	6.70
Total	9,312,000	4.2	62.1	839,000	4.2	60.6	10,151,000	4.2	62.0

In comparison with the previous year, the available reserve increased a further **471,000** tons, the width being **1.7** in. greater and the value **0.1** dwt. less, due mainly to the larger proportion of Kimberley Reef.

The full Report and Accounts (with Plans of Workings) may be obtained from the London Secretaries, A. MOIR & CO., 4, London Wall Buildings, E.C.2.

ROSE DEEP, LIMITED

(Incorporated in the Union of South Africa.)

EXTRACTED FROM THE ANNUAL REPORT FOR THE YEAR ENDED DECEMBER 31, 1950.

Authorised and Issued Capital £700,000 in £1 Shares, fully paid.

DIRECTORATE :

P. H. ANDERSON (Chairman).
E. J. F. HARRINGTON. J. N. MACKENZIE. W. POTT.
T. REEKIE. G. V. R. RICHDALE.

Tons milled **1,017,000**

		Per ton milled
Total Working Revenue ...	£1,742,079	£1 14 3
Total Working Expenditure	1,418,371	1 7 11
Working Profit	£323,708	£0 6 4
Total Profit for the year		£328,370
Balance unappropriated at December 31, 1949		178,659
Transfer from Shareholders' Contingency Reserve		700
		£507,729
This amount has been dealt with as follows :—		
Funds Transferred for Capital Expenditure	£10,145	
Taxation	92,131	
Forfeited Dividends Account	719	
Dividends declared during the year Nos. **90** of **3s. 6d.** per share and **91** of **3s. 6d.** per share ...	245,000	
		347,995
Leaving a balance unappropriated of		£159,734

The **Ore Reserve** re-estimated at December 31, 1950, was as follows :—

	Available			Shaft and Safety Pillars			Total		
	Tons	Value Dwt.	Width Inches	Tons	Value Dwt.	Width Inches	Tons	Value Dwt.	Width Inches
Main Reef	1,101,000	3.4	60.9	54,000	4.1	60.6	1,155,000	3.4	60.9
Main Reef Leader	201,000	3.5	51.2	83,000	3.7	55.6	284,000	3.6	52.4
Composite Reef	174,000	4.1	54.3	139,000	3.9	72.8	313,000	4.0	61.2
South Reef	888,000	3.3	56.9	112,000	4.1	70.9	1,000,000	3.4	58.2
Total	2,364,000	3.4	57.9	388,000	3.9	66.0	2,752,000	3.5	59.0

Compared with the previous year's estimate the available reserve shows an increase of **65,000** tons, the value being **0.2** dwt. greater and the width **2.9** in. less.

The full Report and Accounts (with Plan of Workings) may be obtained from the London Secretaries, A. MOIR & CO., 4, London Wall Buildings, E.C.2.

ARISTON GOLD MINES

SATISFACTORY DEVELOPMENTS

The Twenty-First Annual General Meeting of Ariston Gold Mines (1929), Ltd., was held on April 19 at the Chartered Insurance Institute, 20, Aldermanbury, London, E.C.

Major-General W. W. Richards, C.B., C.B.E., M.C., chairman of the company, presided.

The following is an extract from the statement of the Chairman, which was circulated with the report and accounts for the year ended September 30, 1950:—

Two hundred and ninety-three thousand tons of ore of an average grade of 7.564 dwt. were milled during the year, against 267,500 tons of 7.401 dwt. grade milled for 1949. In addition, 7,608 tons accumulated concentrates were retreated. One thousand and eight ounces of gold were produced from the special treatment of slags.

The total amount realized for the year was £1,286,506, against a total of £858,859 for 1949, an increase of £427,647. The ore reserves at September 30, 1950, were computed at 3,125,344 tons of an average value of 6.66 dwt. showing an increase of 50,606 tons and an increase in value of .03 dwt. as compared with the preceding year's figures.

UNDERGROUND DEVELOPMENT

Very satisfactory developments are being disclosed at depth, not only in the North ore body, from which we can expect considerable further augmentation to our ore reserves at values higher than average ore reserves grade, but also on the Main ore body on the 23rd level, on the No. 2 ore body 21st level, from which exploration in depth will be carried out, and also to the good values being disclosed on the West reef between the 9th and 22nd levels, from which it will be noted that at September 30 last 122,862 tons of ore of an average value of 8.88 dwt. is included in the reserves.

On technical advice of the general manager and the West African Gold Corporation, Ltd., the Board has decided that a sufficient amount of work has been carried out to explore the possibilities in the immediate vicinity of the area under the old Broomassie Main shaft, and that work on this project should be suspended.

I would point out to you that the work of driving this tunnel north to Broomassie has shown a handsome return in the valuable ore reserves which have been, and are continuing to be, opened up in the ore body north of the north shaft.

Operations on the metallurgical side were conducted uninterruptedly and with improving efficiency throughout the year.

THE ACCOUNTS

I feel sure you will agree that the results disclosed in the accounts are extremely satisfactory, and represent a very great effort indeed.

The profit for the year before taxation amounts to £495,705, against £246,375 profit for 1949. The provision for taxation, on the other hand, is increased from £97,000 to £246,163, which leaves a net profit of £249,542 for the year.

However, additional taxation allowances for capital expenditure have been obtained, and accordingly we receive the benefit of a credit in the appropriation account of an over-provision in respect of previous years' taxation and gold export duty of £44,881, which, with the profit for the year and the balance unappropriated at October 1, 1949, shows a balance of £369,938. After writing off an item of £8,520 trade investments which largely represents costs relating to the issue of debentures by the Ankobra River Power Co., Ltd., for the provision of additional power plant, mainly for the benefit of this company, and the cost of which plant would otherwise have had to be borne by this company, and £100,000 in respect of Broomassie Drive, the balance remaining available is £261,418.

The Board recommend a final dividend for the year of 4½d. per unit (15 per cent), less income tax, making a total of 9d. per unit (30 per cent), less income tax, against 6d. per unit (20 per cent), less income tax for 1949. After charging the amount of £185,625 to cover these dividends, the amount remaining to be carried forward as at October 1, 1950, is £75,793.

The Board feel that the very satisfactory progress during the current year warrants the declaration of an interim dividend of 2¼d. per unit (7½ per cent), less income tax, on account of the year ending September 30 next.

CURRENT OPERATIONS

I am pleased to say that on the basis of the figures to date for the current year both of tonnage and revenue, we are showing consistent returns. For the five months October, 1950, to February, 1951, the tonnage milled is 135,650 tons, as against 119,500 tons for the corresponding period of the previous year, the mine revenue is £536,127, an increase over the corresponding period of the previous year of £47,141, and the mine working profit for the five months is £246,240.

The report and accounts were adopted.

DIVIDENDS

Anglo-American Corporation 40%
Apex Mines 6.6d. (May 12)
British Aluminium 6%
British Insulated Callender's Cables 5½%
British Ropes 9½%
British South Africa Co. 33⅓% *i*
Broken Hill Proprietary 10d. (May 30)
Burmah Oil Co.—Cumulative First Pref. 6%; Cumulative Second Pref. 6%; Cumulative Pref. 8% (April 30).
Champion Reef 5%; 15% *i* (May 2)
Chartered Bank of India 8%
De Beers Consolidated 4s.
English Electric 11%
English, Scottish and Australian Bank 3½%
General Tin Investments 4% *i* (April 26)
Golden Horse Shoe (New) 8½%
Gopeng Consolidated 7½% *i* (April 28)
Halkyn District United Mines 10%
Kaduna Prospectors 33⅓%
Kaduna Syndicate 50%
Kamunting (Perak) Rubber and Tin 15% *i*
Konongo Gold 10% (June 1)
Lake View and Star 12½% *i*
Manganese Bronze and Brass 8½%
Metal Industries 3% *i*
Mining Corporation of Canada 30c. *i*
Morning Star Gold 6d. (May 4)
Mt. Coolon Gold Mines 6d. (May 16)
Mysore Gold 5% (June 27)
Nigerian Electricity Supply 4% *i* (May 1)
Nundydroog Mines 3½% (June 6)
Oceana Development 10%
Offin River Gold Estates 5% *i*
Ooregum Gold Pref. 8% Ord. 2½%
Pahang Consolidated 7% Cum. Pref. 3½% *i*; Ord. 30% *i* (May 24)
Petaling Tin 30% (May 19)
Royal Bank of Canada 2½% (June 1)
Seltrust Investments 100%
Sturtevant Engineering 11%
Triefus & Co. 15%

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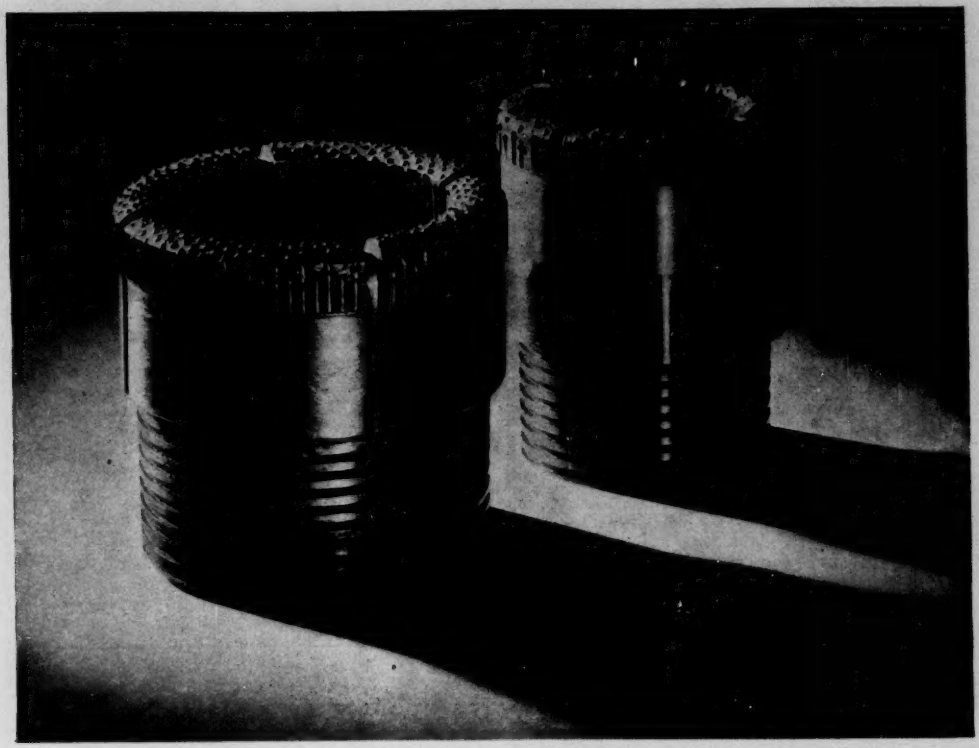

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